RUSS OLSON VOLUME 19B

DULUTH-SUPERIOR TRACTION CO.

Description

Track & Overhead Construction, Power Generation & Distribution, Carhouses & Shops, Operations

Sub-Divisions Within This Volume

- Contents of the Front Pocket
- Track & Overhead Construction
- Power Generation
- Carhouses & Shops
- Operations (with a divider pocket containing transfers)
- Duluth Beltline Ry Great Northern Power
- Contents of the Back Pocket

CONTENTS OF THE FRONT POCKET

Abandonments

Date	Duluth	Superior
7-24-30	W 4th St	
6-15-31	Park Point	
6-25-31		6th St Loop, Broadway, South Superior
10-4-31	Lakeside	
5-10-34	Piedmont Ave	
7-27-34	Superior St E (from 3AE)	
3-5-35	(sleet storm)	Allouez
6-5-35	Interstate (Garfield Ave)	Interstate
6-23-35		East End
8-31-36	Kenwood Ave	
9-14-36	Superior St (2AE to 3AE)	
5-5-37	Gary-New Duluth (from Morgan Park)	
3-x-38	Lake Ave	
3-13-39	West Duluth	
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7-8-39	E 4th St, Woodland, E 8th St, Crosley Ave. W 3rd St/ Grand Ave (to Morgan Park)	
9-4-39	Incline Ry, Highland Ave	

2008

10 15 08

Russ,

DSR "maintained" a "SCRAPBOOK". It was a chronological, condensed copies of DSR-related events as reported in Duluth-Superior news-papers from 1889 thru 1939, a very accurate history book.

Scattered thru the listing are a few non-DSR events which I've copied here.

I trust all is going well for you.

Jim

7/1/1896 (DNT) The DSR ran a car for a trial trip over the new 3rd St. line late yesterday afternoon and today will begin the regular operation of the line. The West 3rd St. line leaves Michigan street at 13th Ave. W., running up Sup. St. to Garfield Ave., thence up Piedmont Ave. to 3rd St. and west to 37th Ave. West. It will be operated in connection with the Lakeside line, and the present schedule of the Lakeside line will be slightly changed, these changes consisting mainly of the addition of cars during the busy hours of the morning and evening. The new line runs past Lincoln Park in the West End, making this beautiful spot easily accessible from all parts of the city.

Jul - aug

/14/1896 (DH) The city of Tower yesterday afternoon began suit against the Tower & Soudan Street Ry. Co, A.H.Crassweller, its receiver, and the American Loan and Trust Co, to annul the railway's franshise. The road was given a franchise in March, 1890, and it received also the city's bond for $6000, the consideration for both of which was that the road should run for 20 years. It ran spasmodically until March 4, 1894, when it expired, and it is now one of the deadest roads in the country. The city claims that the franchise and bond and in fact the road itself is forfeit, and it wants the court to annul the franchise and give it all there is left of the road, 6333 yards of steel rails, worth $1200. The Am. Loan & Trust Co. claims some title to the rails by virtue of bonds of the road, but the city claims that its claim is prior. The right-of-way of the road has lapsed to the original owners long ago.

8/20/1896 (DNT) Miss Helen Haines, daughter of C. R. Haines, gave a trolley party last evening to a large number of her friends. It was the first trolley party of the season. The Party occupied one of Mr. Warren's open chariots and they rode all over the city tooting horns and making merry in the manner that happened to strike their mood from time to time.

oct

10/11/1896 (DNT) "AN OBSERVATION CAR" " FINE ADDITION THAT IS BEING MADE TO STREET RY. EQUIPMENT" " VERITABLE PALACE ON WHEELS" " AN ELABORATE VEHICLE TO BE LEASED FOR PRIVATE PARTIES AND FOR DISTINGUISHED VISITORS." At the 26th Ave. W. carbarn there is a street car building that will be novelty in Duluth at least. For some time past the DSR officials have felt the need of having an observation car, in which their visitors, distinguished guests of the city or the various business and social organizations may be conveyed over the company's system, and thru the windows of which they may view the city without getting permanent cricks in their necks from trying to look in front, behind and on both sides of them at one and the same time. To obviate this inconvenience the construction of the observation car was ordered, which, in addition to the purposes above mentioned, can be chartered for select trolley parties. The new car is 18 ft. long inside and of the usual width. The floor is of highly polished, quarter sawed oak, which will be covered with expensive Oriental rugs . The vestibules at either end are semi-circular in form and their windows are of heavy French plate glass. The ceiling is a piece of exquisite inlaid work, the panel work around the sides of the car are of solid polished cherry and the windows will be handsomely draped. There will be no fixed seats in the car, a dozen willow chairs, of different designs and furnished with silk covered cushions, will supply the place of the usual bench seats, so that seated at ease the occupants can view the passing show at their ease. The arrangements for lighting and heating are very complete. A group of five incandescents, with real cut glass shades, will hang in the center of the car ceiling, and on each of the window posts will be a ground glass incandescent with a cut glass shade, making in all 25 lamps inside the car. A string of 50 colored lights of various hues will be strung around the deck of the car, when in use for pleasure parties at night. 6 electric heaters of a capacity of 15 amperes, will furnish sufficient heat to render the car as comfortable as a drawing room, even in the most severe weather. Nor is the comfort of the motorman and conductor overlooked, for there are provided heavy warm mats upon which to stand in which are worded the name of the car, "St. Louis". The color of the outside will be nearly the same as the regulation yellow of the ordinary car, but the finish will be as fine as that of the most expensive private car. No exterior decoration will be attempted save that the name "St. Louis" will be emblazoned on each side panel. The running gear of the motrs will be of the ordinary pattern in use by the company. The car probably will be ready for use by the end of the month.

7/10/21 Stringing of 6 miles of trolley along the new line of the Mesaba St. Ry. Co. will begin at once and will probably occupy workmen about [illegible] weeks, according to L. [illegible] Hayes, supt., of the company. Despite difficulty in obtaining materials, the work is progressing at a rapid rate, Mr. Hayes said. Trolley wires already have been strung about a ½ mile out of Chisholm. The wires remain to be strung in So. Hibbing and directly out of the village along the new right of way. Laying of track for the connecting link between north and So. Hibbing, skirting the 3rd Ave. highway and the cemetery, has already begun. About 2 miles of steel will be laid. Just when street cars will operate on the streets of the new Hibbing is uncertain, not even a tentative date for the starting of a new schedule of operations in Hibbing has been set. Besides trolley and track work, a substation is to be built at the corner of 6th & Howard. We also must make plans for furnishing power for our lines, Mr. Hayes said.

✓ 7/14/21 (DH) "TWO DOUBLE-TRUCK STREET CARS TO HELP PARK POINT CROWDS". Two large double-truck street cars will be taken over the aerial bridge towmorrow morning at 9:30 for the purpose of relieving the congestion of hot weather traffic on the Park Point line, according to an announcement of the DSR Co. The two cars will operate in conjunction with the seven cars now on Park Point and will furnish a ten-minute service. The big carswill be operated as one car, one acting as a trailer for theother. Special couplings and air brake connections have been made for the purpose of hooking them together. The rear ends of the cars will be coupled, thus providing one of the cars always going with a regular front ahead. The cars will be provided with one motorman, but two conductors will be used, one for each of the cars. Last Sunday they handled the heaviest crowd on Park Point, the total number of passengers was 10,800. This is a record for the line since taken over ~~the~~ by DSR, although it must have been exceeded in the early days when the White City resort was situated there. With the two big cars added to that of the others now in operation, we hope to give service that will handle the crowds with less congestion. The cars will be run over under their own power. They will be run to the end of the Lake Ave. line, then special rails laid onto the bridge and special extension wires run so that the cars may be operated by them. They will be run off the bridge onto the Park Point tracks in the same manner. The big cars will be kept on Park Point until late in the fall.

8/30/21 (DH) (20-yrs. ago column - 1901) The new "Y" placed by the street railway company at 3rd Ave. west and Sup. St. does not meet the approval of City Engineer Patton, who says it runs too close to the sidewalk and one side is higher than the other.

COPY

Note: Ed Burg, Sup't of Trans. ~~now~~ says he recalls that these cars were of the 150-class & probably single-gates.

COPY

ical engineering dep't of Chicago Surface Lines to succeed Mr. Byers present position, of assistant to Mr. Warren.

4/8/1927 (DH) (20 yrs.ago column --1907) Preparatory to the construction of the new street car line up 24th Ave. E. from Sup. St. to 4th St., the company will replace the "Y" at 8th Ave. W. with a large loop so that many of the cars running to the eastern section will be turned back there.

4/20/1927 (DH) (20 yrs ago column — 1907) The DSR Co. has awarded the contract for its new office building at 26th Ave. W. to Alexander Roberts. It will be ready for occupancy about Oct. 1st.

5/5/1927 (DH) (20 yrs ago column --1907) The board of fire commissioners has authorized the purchase of a car from the Interstate Traction Company which will be equipped with fire-fighting apparatus for the protection of Park Point.

5/6/1927 (DH) (20 yrs ago colu mn) --1907) The Twin City & Lake Superior Electric Railway Co. has filed articles of incorporation , and it is stated will begin construction of an electric railway between Duluth and St. Paul in the near future.

ok

5/17/1927 (DNT) An order authorizing Oscar Mitchell and James C. Chestnut, receivers of the Mesaba Ry. Co. defunct electric interurban line which se rved range towns, to sell certain equipment was issued Monday by Judge Wm. A. Cant of federal court. Receivers petitioned the court for permission to sell to the Dul. Iron & Metal Co. for $84,300 the rails, rail fastenings and overhead equipment. The petition was granted on condidtion the Metal Co. make payment as follows: $30,000 before any material is removed, $20,000 to be paid in 30 days, $20,000 within 60 days, and $14,300 in 90 days.

5/30/1927 SupEveTele) Work on the construction of a street car loop from 13th to 14th Ave. East on Jefferson st. was started last week. Shown above are street railway employees at work on the loop, at 14th Ave. East. The loop, which is to cost $23,000 is expected to be finished in two weeks.

ok

6/5/1927 (DNT) Orders granting receivers of the Mesaba Ry. Co. rights to sell property owned by the road were filed in federal court Saturday. They petitioned the court for authority to sell to the Duluth Iron & Metal Co. for $5,000 all the trucks, motors under passenger cars, freight cars, passenger trailers and flat cars. They also petitioned the court for an order to sell the bridges and trestles to the Elizabeth Mining Co. for $3,500.

6/18/1927 (DH) (20 yrs agol column --1907) Fire in the power house of the street railway which tied up car lines marooned some 200 to 300 West Duluthians downtown. Some took the 11:00 p.m. train for home, others paid high fares to hackmen, while others walked.

7/2/1927 DNT) Recommendations of the Chamber of Commerce street railway committee that the city council be petitioned to order the DSR Co. to double track the Woodland car line to the end of the line . Under the present arrangement, with the switch to a single track located 3600 feet from the end of the line, it is necessary for the inbound car to travel on the wrong side of the street, and in the winter, after snow has been allowed to accumulate at the curb, it becomes impossible for an automobile to pass between the snow and the oncoming car. There is also a delay experienced by the street cars during rush hours, when outbound cars are forced to wait one to eight minutes before switching to the single track.

COPY

2/3/1930 (EveTele) Saturday night a charming, well dressed young woman seated aboard a Superior - Duluth street car had "her most embarrassing moment." Upon arising from her seat at the corner of TowerAve. & 19th street, a pint of "white mule" fell from the folds of her coat to the floor. As everyone in the car turned to look at her, she hastily gave the bottle a push with her foot toward the side of the car, and with a fiery red face, left the street car. Stopping to switch, the car at 21st Street, the conductor tested the liquid by placing some in his hand, and placing a match to it. It immediately burst into flame. Several men on the car who had planned on getting off the car and asking the lady where she got it, after the exhibition conducted by the conductor, decided to remain in their seats.

2/8/1930 (DH) "FIRST STREET CAR CROSSES THE NEW LIFT SPAN". The first street car to cross the new lift span over the ship canal made the trip at noon today. The car, from the Park Point line, was taken across without difficulty by the car crew, but no passengers were permitted in it as it was out of service. According to the car company officials, they are just taking the car to the main carbarns to be overhauled before it is put into regular passenger service over the new bridge to Park Point. When it is ready for service, other cars on the Point will be brought into the main shops for repairs.

/1910/

2/10/1930 (DH 20 yrs ago column) The net income of the Interstate Traction Co. on Park Point for the past year was $1,236.56. There were 416,000 passengers carried.

/1910/

2/5/1930 (DH 20 yrs ago column) The gross earnings of the DSR were $754,553 for the past year, according to a report filed with the city comptroller, over 15,000,000 passengers being carried.

/1890/

1/31/1930 (DH 40 yrs ago column) The bob-tailed mule is going slowly but surely. The street railway company is reducing its outfit of mules as fast as they can be disposed of, and horses are being put on in their place. The bob-tailed cars will be displaced by new and handsome sixteen-foot cars.

x ok 3/8/1930 (DH) The Mankato, Minn. street-car line will cease operations at midnight the manager announced today. Unable to continue because of financial difficulties brought on by insufficient income, the line, operatied by the Mankato Electric Traction Company, will end nearly a quarter century of service.

3/12/1930 (DH) /caption under photo of P.P. double-trucker on bridge/ "STREET CAR TRAFFIC STARTS ACROSS BRIDGE". The long-awaited service by street-cars, running directly from Park Point to the mainland via a lift span bridge became a reality at 5;28 a.m. today, when the first car of the mroning running out of the car barn proceeded directly to 43rd Street, the end of the Park Point line, and returned, picking up Park Pointers early bound for the city proper and work. The Herald "caught" the crossing of a car on the span of the remodeded bridge.

1/23/1899 Car No. 48 of the Woodland line, broke an axle while going east, between 5th and 6th Ave. W. on Supr. St. yesterday afternoon

COPY

7/23/1898 (DNT) Some of the employes of the D.S.R. Co. are dissatisfied with certain new orders of the corporation and have taken the matter into court. The principal complaint falls upon Order No. 104 which stipulates that conductors, motormen, starters, and linemen shall be exempt from paying fares only when wearing the uniform cap and badge, and night and day station foremen and dispatchers only when boarding cars in the performance of their duties, and not riding on the same car to exceed three blocks. It is further ruled that shop employes of the motive department shall be given tickets daily by the master mechanic or chief engineer to ride to and from their work.

9/20/1898 (DH) According to plans of the Int. Rapid Transit Co. the new wide-gauge track running from the Interstate bridge to the [illegible] crossing in Superior, will be completed inside of 30 days. 100 men are now at work laying the rails and preparing the road bed on 3rd St., where several rods of the new track are now down. Two tracks are to run across the [illegible] Ave. bridge, and the men are now at work laying a new foundation of plank. When the new track is laid the interurban car service will be immediately inaugurated. Cars are to run interurban daily between Duluth and Superior without transfers at the bridge. A number of cars are now being fitted with wide gauge trucks to run on the new line, and besides these cars, a number of new ones will be purchased.

10/27/1898 (DNT) In the matter of receivership of the D.S.R. Co., the receiver, Luther Mendenhall, petitioned district court yesterday for an order permitting him to continue working under the company's contract with the U.S. Government in carrying the mail on the company's cars between Duluth proper and W. Duluth and Lakeside; and to be authorized to enter into into a contract to carry mail from [illegible] Ave. W. and Sup. St. to Hunter's Park.

11/17/1898 (DH) There are a great many Duluth people who make their homes during the summer months on Minn. Point, who are now engaged in speculation as to the means that will be afforded them for crossing the canal next season. All of next summer work on the new canal piers will be in progress. The Interstate Traction Co., the high sounding name of the corporation that operates the bob tail horse car line on the Point, has completed plans for the construction of an electric street railway to take the place of the very primitive mode of transit in use last summer. The road will be extended a mile or more beyond the present terminus of the horse car line and will open up additional camping ground and make room for a larger summer population. The cars that it is intended to use on the proposed road will be built expressly for summer travel and will be both commodious and comfortable. They will be open and fitted with wooden curtains which will afford ample protection in case of cold or stormy weather.

ok

12/12/1898 (SupLeader) The street car barn of the Benton Power Traction Co., a mile west of St. Cloud, was entirely destroyed by fire at 3:30 this morning. Passenger cars and a snow plow in the building, are in ruins. The loss is estimated at $15,000; insurance just one-half. Two cars in the east barn, one being an open summer car, and another not in the barn, were saved. The system will be badly crippled for the want of cars until they can be replaced. The origin of the fire is unknown. The was no fire in the building and the current was not on when the fire broke out. It is believed to be the work of tramps. The management is going right ahead to replace the building and cars.

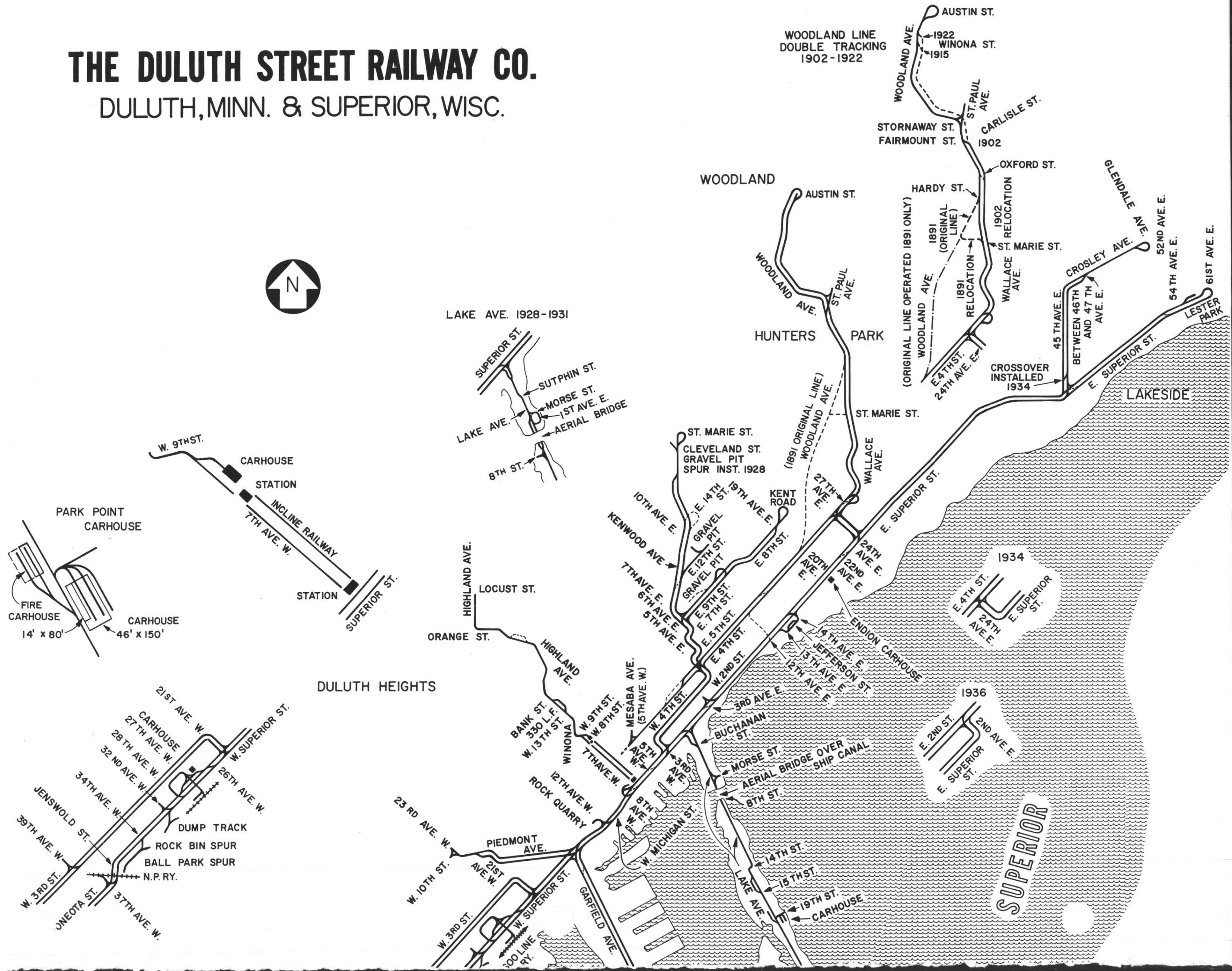
12/22/1898 (SupLeader) Two street cars on each of the lines which carry mail in the city were yesterday sent out from the barns labelled with the official stamp, "U.S.Mail". These cars are thus stamped as being in the employ of the government and when carrying the mail pouches or boxes will be under the protection of Uncle Sam. Any one maliciously interfering with their progress or damaging them in any way will be held responsible under the government laws which are very strict in this regard.

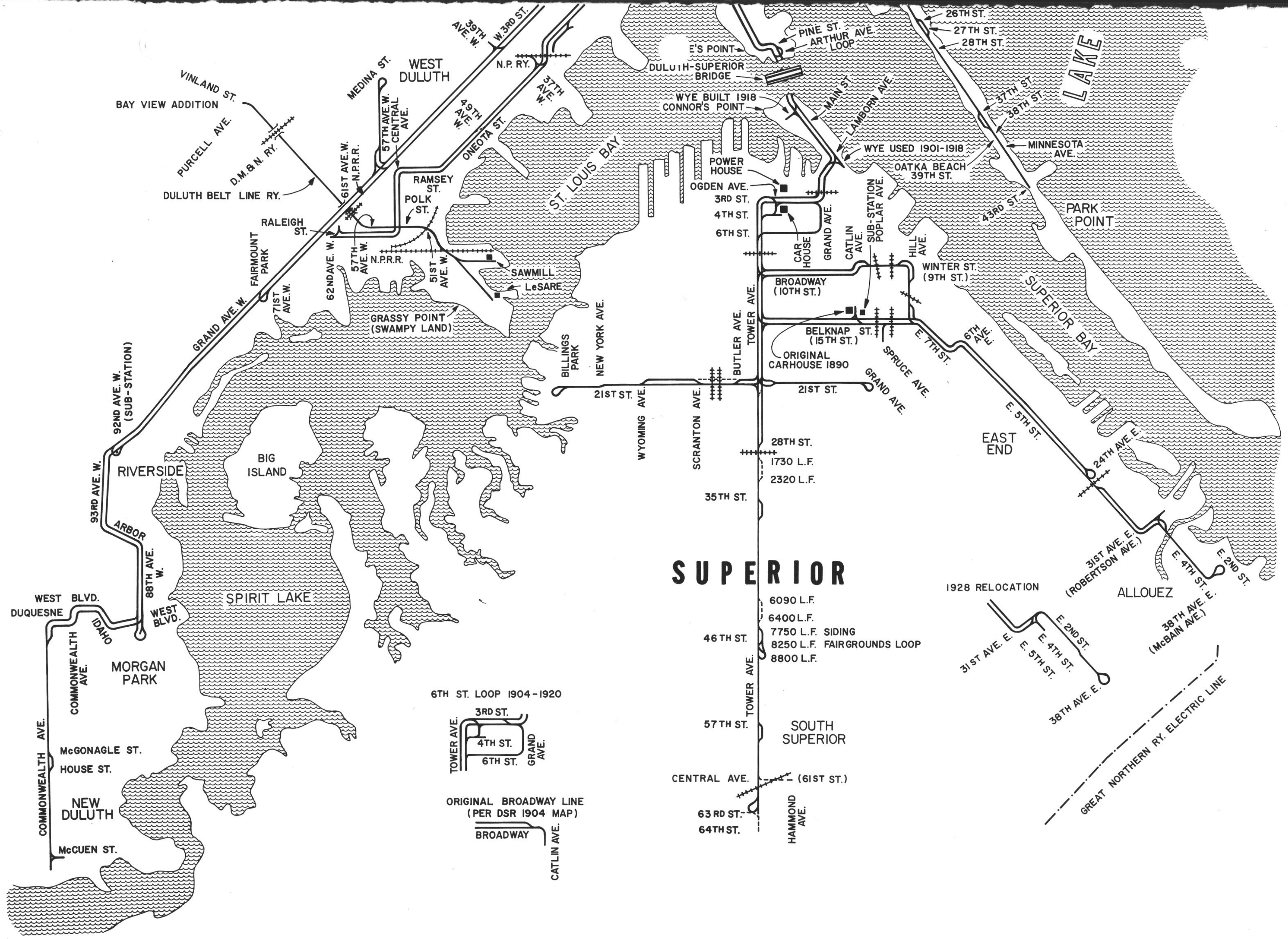
1/23/1899 Car No. 48 of the Woodland line, broke an axle while going east, between 5th and 6th Ave. W, on Supr. St. yesterday afternoon. Quite a number of cars were delayed by the accident for a while.

TRACK & OVERHEAD
CONSTRUCTION

THE DULUTH STREET RAILWAY CO.

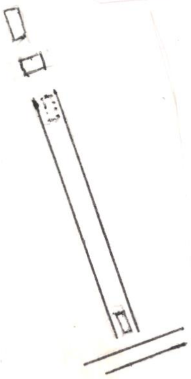
DULUTH, MINN. & SUPERIOR, WISC.

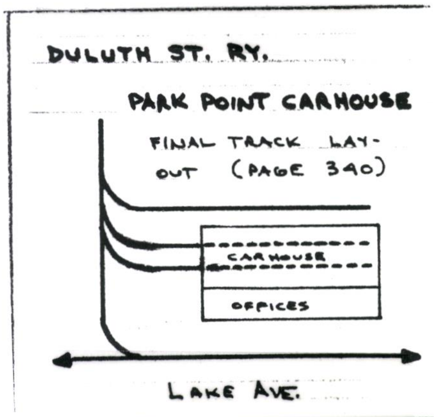

N
WOODLAND LINE DOUBLE TRACKING 1902-1922
AUSTIN ST.
1922
WINONA ST.
1915
WOODLAND AVE.
ST. PAUL AVE.
CARLISLE ST.
STORNAWAY ST.
FAIRMOUNT ST.
1902
OXFORD ST.
HARDY ST.
WOODLAND
AUSTIN ST.
1891 (ORIGINAL LINE)
1902 RELOCATION
ST. MARIE ST.
1891 RELOCATION
(ORIGINAL LINE OPERATED 1891 ONLY)
WOODLAND AVE.
WALLACE AVE.
E. 4TH ST.
24TH AVE. E.
GLENDALE AVE.
52ND AVE. E.
CROSLEY AVE.
54TH AVE. E.
61ST AVE. E.
LESTER PARK
45 TH AVE. E.
BETWEEN 46TH AND 47 TH AVE. E.
CROSSOVER INSTALLED 1934
E. SUPERIOR ST.
LAKESIDE
WOODLAND AVE.
ST. PAUL AVE.
HUNTERS
PARK
ST. MARIE ST.
(1891 ORIGINAL LINE) WOODLAND AVE.
WALLACE AVE.
LAKE AVE. 1928-1931
SUPERIOR ST.
SUTPHIN ST.
MORSE ST.
1ST AVE. E.
LAKE AVE.
AERIAL BRIDGE
8TH ST.
ST. MARIE ST.
CLEVELAND ST. GRAVEL PIT SPUR INST. 1928
10TH AVE. E.
E. 14TH ST.
19TH AVE. E.
KENT ROAD
KENWOOD AVE.
GRAVEL PIT
E. 12TH ST.
GRAVEL PIT
E. 8TH ST.
27TH AVE. E.
E. SUPERIOR ST.
24TH AVE. E.
20TH AVE. E.
22ND AVE. E.
7TH AVE. E.
6TH AVE. E.
5TH AVE. E.
E. 9TH ST.
E. 7TH ST.
E. 5TH ST.
E. 4TH ST.
W. 2ND ST.
ENDION CARHOUSE
14TH AVE. E.
JEFFERSON ST.
13TH AVE. E.
12TH AVE. E.
1934
E. 4TH ST.
24TH AVE. E.
E. SUPERIOR ST.
W. 9TH ST.
CARHOUSE
STATION
INCLINE RAILWAY
7TH AVE. W.
STATION
SUPERIOR ST.
PARK POINT CARHOUSE
FIRE CARHOUSE 14' x 80'
CARHOUSE 46' x 150'
HIGHLAND AVE.
LOCUST ST.
ORANGE ST.
HIGHLAND AVE.
DULUTH HEIGHTS
BANK ST. 330 L.F. W. 13TH ST.
WINONA
W. 9TH ST.
W. 8TH ST.
MESABA AVE. (5TH AVE. W.)
W. 4TH ST.
5TH AVE. W.
7TH AVE. W.
3RD AVE. E.
BUCHANAN ST.
3RD AVE. W.
MORSE ST.
AERIAL BRIDGE OVER SHIP CANAL
8TH ST.
1936
E. 2ND ST.
2ND AVE. E.
E. SUPERIOR ST.
8TH AVE. W.
12TH AVE. W.
ROCK QUARRY
W. MICHIGAN ST.
14TH ST.
15 TH ST.
LAKE AVE.
19TH ST.
CARHOUSE
SUPERIOR
23 RD AVE. W.
PIEDMONT AVE.
W. 10TH ST.
21ST AVE. W.
W. SUPERIOR ST.
GARFIELD AVE.
W. 3RD ST.
SOO LINE RY.
21ST AVE. W.
W. SUPERIOR ST.
CARHOUSE
27TH AVE. W.
28 TH AVE. W.
26TH AVE. W.
32 ND AVE. W.
34TH AVE. W.
JENSWOLD ST.
39TH AVE. W.
DUMP TRACK
ROCK BIN SPUR
BALL PARK SPUR
N.P. RY.
W. 3RD ST.
ONEOTA ST.
37TH AVE. W.



W. 3RD ST.
39TH AVE. W.
N.P. RY.
37TH AVE. W.
WEST DULUTH
MEDINA ST.
VINLAND ST.
BAY VIEW ADDITION
PURCELL AVE.
D.M.& N. RY.
DULUTH BELT LINE RY.
61ST AVE. W. N.P.R.R.
57TH AVE. W.
CENTRAL AVE.
49TH AVE. W.
ONEOTA ST.
RAMSEY ST.
POLK ST.
RALEIGH ST.
62ND AVE. W.
57TH AVE. W.
N.P.R.R.
51ST AVE. W.
SAWMILL
LeSARE
GRASSY POINT (SWAMPY LAND)
FAIRMOUNT PARK
71ST AVE. W.
GRAND AVE. W.
92ND AVE. W. (SUB-STATION)
RIVERSIDE
93RD AVE. W.
ARBOR
88TH AVE. W.
WEST BLVD.
BIG ISLAND
SPIRIT LAKE
WEST BLVD.
DUQUESNE
IDAHO
COMMONWEALTH AVE.
MORGAN PARK
COMMONWEALTH AVE.
McGONAGLE ST.
HOUSE ST.
NEW DULUTH
McCUEN ST.
ST. LOUIS BAY
E'S POINT
PINE ST.
ARTHUR AVE. LOOP
DULUTH-SUPERIOR BRIDGE
WYE BUILT 1918
CONNOR'S POINT
MAIN ST.
LAMBORN AVE.
WYE USED 1901-1918
POWER HOUSE
OGDEN AVE.
3RD ST.
4TH ST.
6TH ST.
CAR HOUSE
GRAND AVE.
CATLIN AVE.
SUB-STATION POPLAR AVE.
HILL AVE.
BROADWAY (10TH ST.)
WINTER ST. (9TH ST.)
BELKNAP ST. (15TH ST.)
ORIGINAL CARHOUSE 1890
TOWER AVE.
BUTLER AVE.
SPRUCE AVE.
E. 7TH ST.
6TH AVE. E.
BILLINGS PARK
NEW YORK AVE.
21ST ST.
WYOMING AVE.
SCRANTON AVE.
21ST ST.
GRAND AVE.
28TH ST.
1730 L.F.
2320 L.F.
35TH ST.
SUPERIOR
6090 L.F.
6400 L.F.
46TH ST.
7750 L.F. SIDING
8250 L.F. FAIRGROUNDS LOOP
8800 L.F.
TOWER AVE.
57TH ST.
SOUTH SUPERIOR
CENTRAL AVE.
(61ST ST.)
63RD ST.
64TH ST.
HAMMOND AVE.
26TH ST.
27TH ST.
28TH ST.
LAKE
37TH ST.
38TH ST.
MINNESOTA AVE.
OATKA BEACH 39TH ST.
43RD ST.
PARK POINT
SUPERIOR BAY
E. 5TH ST.
EAST END
24TH AVE. E.
31ST AVE. E. (ROBERTSON AVE.)
ALLOUEZ
E. 4TH ST.
E. 2ND ST.
38TH AVE. E. (McBAIN AVE.)
1928 RELOCATION
31ST AVE. E.
E. 2ND ST.
E. 4TH ST.
E. 5TH ST.
38TH AVE. E.
GREAT NORTHERN RY. ELECTRIC LINE
6TH ST. LOOP 1904-1920
3RD ST.
4TH ST.
6TH ST.
TOWER AVE.
GRAND AVE.
ORIGINAL BROADWAY LINE (PER DSR 1904 MAP)
BROADWAY
CATLIN AVE.

› 340 The lower station on the Incline (at Superior St.) was narrow, and squeezed between the two tracks, much like the intermediate stations: (see photo on pp 330):




DULUTH ST. RY.
PARK POINT CARHOUSE
FINAL TRACK LAY-OUT (PAGE 340)
CARHOUSE
OFFICES
LAKE AVE.

Street Railway Journal
February 1891

First 2 lines
Girder rail set on chairs
Ties 3'0" on centers set on
crushed rock and Concrete

Span wire suspension with iron poles.

TRACK AND OVERHEAD CONSTRUCTION

The horsecar track construction of the Duluth and Superior systems has been related as part of the general history of the individual companies. The early electric track construction of the real estate promotion lines has been related in the sections devoted to the history of each company. In this section is the electrification of the Duluth and Superior systems before the various independent companies were acquired. The history of the track and overhead acquired from these independent companies is included with the Duluth and Superior track and overhead history from the date of acquisition onward.

DULUTH

1890

The lone horsecar line was rebuilt to 4'8½" gauge double-track and electrified during 1890. Reports dated June 1890 stated that contracts for the electric railway lines had been awarded to the Thomson-Houston Company for electrification and to Johnson & Company for the rails.

This track was located on Michigan St. and Superior St. from 28th Ave. W. and Superior St. to 22nd Ave. E. and Superior St. The first electric operation began November 8th from 24th Ave. W. to 8th Ave. E. Full electric operation from 28th Ave. W. to 22nd Ave. E. began December 21st. The segment on Superior St. from 24th Ave. W. to 28th Ave. W. was single track and had been operated with horsecars from November 8th to December 21st. 45 lb. Johnson girder rail was used in the reconstruction. Crossovers were installed at the ends of the line and at certain intermediate points as the electric cars were built for double-end operation.

A completely new electric line, the "East 4th St." line, was constructed during 1890 and opened for service to 10th Ave. E. on December 2nd, and to 14th Ave. E. on December 21st. This involved double track, using 45 lb. Johnson girder rail, on 3rd Ave. W. from Superior St. to 2nd St. (an 8.7% grade), on 2nd St. from 3rd Ave. W. to 6th Ave. E., on 6th Ave. E. to E. 4th St.; and single track on E. 4th St. to 14th Ave. E.

1891

Single track was built on E. 4th St. from 14th Ave. E. to 20th Ave. E. by February. The Motor Line Improvement Company's "Woodland" line opened April 28th. Single track was built on E. 4th St. from 20th Ave. E. to 27th Ave. E. during September and October.

The "West Duluth" line was completed in November or December. This consisted of double track from 28th Ave. W. and Superior St. on Superior St., Sutphin St. (Jenswold St.), Oneota St., Ramsey St., and Central Ave. to Central Ave. and Raleigh St.; and single track along the north side of Raleigh St. to 62nd Ave. W. 5 3/4" 60 lb. T rail was used in the construction.

1892

A line was built on Garfield Ave. from Michigan St. to the dock front on Rice's Point which was opened for service September 25th. Much of this line was single track due to the crossing at grade of numerous railroad tracks. Rice's Point was the closest land area to Superior, Wisconsin, and had become the center of much commercial activity: sawmills, railroad yards, grain handling, coal docks and other ship-to-shore facilities.

The "West 4th St." line was opened November 4th. This consisted of track on W. 4th St. from 6th Ave. E. to 5th Ave. W. (Mesaba Ave.). Double track was built from 6th Ave. E. to Lake Ave. while the remainder was single track. The location of this line was ill-conceived, being the result of persistent demands upon DSR by pressure groups and the city council for a line on the central hillside.

A line was also built on Lake Ave. from Superior St. to the ship canal: double track from Superior St. to Buchanan St. with remainder single track. The date of opening is not known; the newspaper of November 9th reported the junction curves at Lake Ave. and Superior St. were being installed and nearing completion.

1893-1894

During the early part of 1893 second track was added on E. 4th St. from 14th Ave. E. to 27th Ave. E. The "Woodland" line used open trailers during the summer months and apparently the grade on 3rd Ave. W. was troublesome for the single-truck motor cars pulling trailers. In May 1893 the city granted DSR the right to build a single track on 12th Ave. E. between Superior St. and E. 4th St. for use by eastbound "Woodland" cars. Apparently this track was built during 1893 and used during the summer months. It was again used beginning May 1, 1894, but was discontinued May 19, 1894, and subsequently removed.

1895-1896

The "West 3rd St." line was constructed during the fall of 1895 and spring of 1896. This was all double track construction using 60 lb. T rail. The track was built from 13th Ave. W. and Michigan St. to Superior St., on Superior St. to the intersection of Garfield Ave. and Piedmont Ave., on Piedmont Ave. to the intersection of 19th Ave. W. and W. 3rd St., and on W. 3rd St. to 40th Ave. W. (Collingwood Ave.). An old map shows single track on W. 3rd St. from 37th Ave. W. to 40th Ave. W. Regular operation as far as 37th Ave. W. began July 1, 1896. The section on Piedmont Ave. was located to pacify the city council but required extremely difficult construction. The track was put through solid rock around the Point of Rocks and up a steep grade; the overhead poles also had to be set in solid rock.

1897

The Duluth-Superior Bridge was constructed over St.Louis Bay between Rice's Point, Duluth, and Connor's Point, Superior. Double track was laid on the bridge deck and the first test runs were made May 28th. (The bridge was opened to foot traffic July 13th.) The "Garfield Ave." line was extended on Pine St., Arthur Ave., and across the bridge into Superior to the foot of the Superior approach to the bridge. Renamed the "Interstate" line, the first regular operation across the bridge was begun September 1st. About 600 l.f. of track on the original "Garfield Ave." line from Pine St. to the dock front on Rice's Point was then removed.

1899

To accommodate the first rebuilt single-end, single-truck cars, wyes were installed at (1) Lake Ave. and Morse St., and (2) 62nd Ave. W. and Raleigh St. Both were completed July 1st.

1900

The Ford Bacon & Davis consulting engineers report of March, 1900, listed the types of rail in use as: 35 lb. T rail, 45 lb. T rail, 45 lb. 4¼" girder rail, 56 lb. T rail, and 60 lb. 5 3/4" T rail.

1901

In preparation for the operation of new single-end, double-truck cars, the following trackwork was installed.

1. A loop at Lester Park at the end of the "Lakeside" line. (61st Ave. E. and Superior St.) in April.
2. A wye at 3rd Ave. E. and Superior St. during August for "Interstate" line cars.
3. A wye at 23rd Ave. E. and Superior St. for "East End" line cars.
4. A wye at 8th Ave. W. and Superior St. during August.

A 306.5 l.f. spur track was built into Northern Pacific Railway property at 37th Ave. W. and Oneota St. northward to a connection with the Elliot Packing Plant spur track. Over this rail connection DSR received materials, supplies, and new streetcars from the builders. DSR records are unclear as to whether this track was built during 1901 or January, 1903. In 1906 necessary track was added to form a wye off Oneota St. at 37th Ave. W.

1901-1902-1903

The crossing of 16 railroad tracks at grade on Garfield Ave. constituted a hazard as well as an operating nuisance. The Northern Pacific Ry. planned to build a bridge over its tracks as part of extensive changes at its Rice's Point facilities. In preparation for this work, extensive changes to DSR tracks in the vicinity were required. Preliminary work was begun during 1900. By the spring of 1901 tracks had been laid on Superior St. from 18th Ave. W. to Garfield Ave., thus eliminating trackage on Michigan St. and 18th Ave. W. The completed track was opened for service during the summer of 1901 and work then began on the new bridge. During April and May 1902 double track was laid on the completed bridge, thus eliminating track on Michigan St. between 13th Ave. W. and 18th Ave. W. The net result was the reduction of grade crossings to five, all of which were limited-use dock-access tracks. By August 1903 double track had been completed over the entire length of Garfield Ave. which formerly had a considerable amount of single track.

1902

Center poles with brackets were replaced by side poles with span wire construction on the E. 4th St. track during May.

Second track was added on Raleigh St. from Central Ave. to 62nd Ave. W., completed in October.

The original "West Duluth" line on Jenswold St. (formerly Sutphin St.) crossed over the St.Paul & Duluth Railroad (Northern Pacific Ry.) tracks on a timber trestle which by 1902 was in such poor condition that it was unsafe for further use. It was replaced by an underpass necessitating a temporary detour track on 39th Ave. W. between Grand Ave. and Oneota St. which was in use from July 9, 1902, until April 11, 1903.

1903

Single track was built on Grand Ave. (W. 3rd St. became Grand Ave. at 40th Ave. W.) from 40th Ave. W. to 60th Ave. W., completed August 15th.

The Highland Ave. trackage was rebuilt from 8th St. to Locust St., involving 9,865.28 l.f. of single track.

A wye was installed at W. 4th St. and Mesaba Ave. for use by single-end cars. The single track had ended at the east property line of Mesaba Ave. but the wye was built in the intersection.

A rail replacement program was begun on E. Superior St., E. 2nd St., E. 4th St., Lake Ave., and W. 3rd St. using 8" 79 lb. T rail. At this time the end of double track on Lake Ave. was cutback from Buchanan St. to Sutphin St.

Single track was built on Woodland Ave. between Hardy St. and St.Marie St. for use as a gravel pit spur. It served what was known as Mcfarlane's or Woodland Gravel Pit.

1904

A wye at 23rd Ave. E. and Superior St. was moved during the fall to 24th Ave. E. and Superior St.

1905

For the purpose of accommodating the new single-end, double-truck cars a wye was installed during March at St.Paul Ave. and Woodland Ave. and named the Hunter's Park Wye. Service from this point to the end of the line at Austin St. was operated with a double-end, single-truck shuttle car. Objections to turning the new large cars at the new wye were so strenuous that it was decided to run them through to the end of the line so a loop was built during August at Austin St. and Woodland Ave.

Single track was built on Grand Ave. from 60th Ave. W. to 71st Ave. W. Second track was added on Grand Ave. from 47th Ave. W. to 49th Ave. W. All of this work was completed October 1st.

1906

Single track was built on 57th Ave. W. from Grand Ave. to Medina St.; opened for service October 15th.

A wye was built at 12th Ave. W. and Michigan St.

The Arthur Ave. Loop at the approach to the Duluth-Superior Bridge was built during August when a ship collided with the bridge, damaging it to the extent that it was out of service for two years. It was originally called the Alger-Smith Loop because it was located near that company's lumber mill.

1907

The wye at 8th Ave. W. and Superior St. was removed and replaced with a loop and storage track during the spring. This loop was for use by westbound cars.

A curve with necessary switches was installed in the existing special work at Garfield Ave. and Superior St. to facilitate pull-outs from the Duluth carhouse to the Duluth-Superior Bridge.

A wye was installed at Grand Ave. and 39th Ave. W.

Sidings had been installed during the late 1890's at 34th Ave. W. and Superior St. in the vicinity of the Duluth, Missabe & Northern Railway ore docks which were used for access to ash dumps. One of these leads was extended 600 l.f. around the curve on Jenswold St. with a capacity of six to eight double-truck cars. It was used as a car storage track during events at the nearby Duluth Baseball Club Park. A walkway was built alongside the track. Previously the wye and spur track at 37th Ave. W. and Oneota St. had been used for this purpose.

Double track was built on 24th Ave. E. between Superior St. and E. 4th St., completed August 19th. This track was used to change the routing of "Woodland" line car from E. 4th St. to Superior St.

1908

In April DSR entered into an agreement with the city to haul rock from a quarry operation near

12th Ave. W. and Michigan St. to the lakeshore near Morse St. for reinforcement of the shore line. The wye at Lake Ave. and Morse St. was extended to the shore. A spur track alongide the quarry was built and connected to the wye at 12th Ave. W. and Michigan St. DSR developed quite a rock-hauling business from this quarry. In 1915 rock for resurfacing streets in West Duluth and Lakeside was hauled from here. In 1917 it was reported that DSR had hauled from 1,300 tons to 5,200 tons of crushed rock each season for the City of Duluth.

1909

The old St.Louis County Courthouse was located on 6th Ave. E. between 2nd St. and 3rd St. A new courthouse was built closer to the central business district. As patronage was considerably reduced on DSR's trackage past the old courthouse site it was decided to relocate the track so as to obtain an easier grade. Track on 6th Ave. E. from 2nd St. to 4th St. was abandoned and replaced by double track on 5th Ave. E. from 2nd St. to 4th St., the work being completed in June. Used rail from this relocation replaced the original rail on portions of W. 4th St. Second track on W. 4th St. was cutback from Lake Ave. to 2nd Ave. E. August 18th.

Second track was added on Grand Ave. from 39th Ave. W. to 57th Ave. W., the work being completed in October.

Second track was added on E. Superior St. from 47th Ave. E. to 61st Ave. E.

1910

Track was built on Piedmont Ave. from W. 3rd St. to the intersection of 23rd Ave. W. and 10th St. Opened for service June 1st.

1911

Second track was added on Grand Ave. from 57th Ave. W. to 63rd Ave. W. The necessary curves and switches were installed at 57th Ave. W. and Grand Ave. for form a wye at that location. All this work was completed in July.

A connection with the Soo Line Railway was built at 27th Ave. W. and Superior St. The old connection with the Northern Pacific Railway at 37th Ave. W. and Oneota St. was then removed.

1912

The wye at Grand Ave. and 39th Ave. W. was extended 600 l.f. northward during July to provide additional car storage capacity for circus grounds events.

Double track was built on 21st Ave. W. from Superior St. to W. 3rd St. The existing double track on W. 3rd St. between the intersection of 19th Ave. W. and Piedmont Ave. and 21st Ave. W. was abandoned. All of this work was completed as of May 1st.

The "East 9th St." line was built: double track from 5th Ave. E. and E. 4th St., via 5th Ave. E., E. 5th St., 6th Ave. E., E. 7th St., 7th Ave. E., and E. 9th St., to 9th Ave. E.; single track on E. 9th St. from 9th Ave. E. to 13th Ave. E., all completed November 1st. A gravel pit was opened on E. 9th St. at 8th Ave. E. and a spur track built into the pit.

1915

Work started October 11th on a 2,200 l.f. extension of second track on Woodland Ave. from Stornaway St. to a point beyond Winona St. at the top of Hartley Hill.

The crossovers used by the double-end, single-truck cars had been gradually removed as these cars were replaced with new single-end, double-truck cars. The last crossover in Duluth, at 5th Ave.W. and Superior St., was removed during July.

World War I resulted in considerable industrial expansion in the southwest area of Duluth adjacent to Spirit Lake at the mouth of the St.Louis River. A steel plant was under construction at Riverside (Ironton) as well as the McDougall-Duluth Shipyards. The U. S. Steel Corporation steel plant, cement plant, and self-contained "model" community at Morgan Park (named after J. P. Morgan) were also under construction. To serve these industries DSR undertook construction of additional trackage. Single track was built on Grand Ave. from 71st Ave. W. to 84th Ave. W. Second track was added in two stages: (1) from 63rd Ave. W. to 71st Ave. W., and (2) from 71st Ave. W. to 74th Ave. W. All of this trackwork was done during 1915 before cold weather halted all construction in November.

1916

Construction resumed in the spring on the track to Morgan Park. Single track was built on Grand Ave. from 84th Ave. W. to 93rd Ave. W., on 93rd Ave. W. and Arbor Ave. to 4th St. (later 88th Ave. W.), and on 4th St. to a loop at E St. called the Morgan Park Loop. A passing siding was located on Grand Ave. between 82nd Ave. W. and 83rd Ave. W. A length of double track extended from Grand Ave. and 92nd Ave. W. to 4th St. and A St. Track was located on the side of the road on Grand Ave. from 73rd Ave. W. to 93rd Ave. W. This "Morgan Park" line was opened for service on June 12th or 16th.

During July six automatic block signals were installed on the single track segments: one near 81st Ave. W., two near the substation at 92nd Ave. W., one near 87th Ave. W. (and Arbor Ave.), and two at the Morgan Park end. Previously installed signals were located at each end of the single track running from 71st Ave.W. to 84th Ave. W.

A wye was built at 32nd Ave. W. and Superior St.

1917

Second track was added to all single track segments of the "Morgan Park" line so that the line was entirely double track, all of this work being completed by October. A loop was built at the substation located at 92nd Ave. W. and Grand Ave. during November. The trackage from 93rd Ave. W. and Zimmerly to the Morgan Park Loop was located on a center-of-the-road reservation with center-poles-with-brackets trolley wire suspension; which now was the only construction of that nature on the system.

An extension of the "Morgan Park" line, called the "Gary-New Duluth" line was constructed during 1917 and opened for service January 1, 1918. Materials for the construction were delivered to DSR by the Northern Pacific Ry. at 85th Ave. W. and Grand Ave. where a 600 l.f. connecting spur track had been built. This connecting track was removed February 19, 1918, after track construction was completed. Side-of-the-road double track was built along West Boulevard, Idaho, Commonwealth Ave., and Duquesne to Commonwealth Ave.; single track was built on Commonwealth Ave. from Duquesne to McCuen St.; a passing siding was located on Commonwealth Ave. between McGonagle st. and House St.

The "Kenwood" line was completed October 10th: double track built on 7th Ave. E. from E. 9th St. to its intersection with Kenwood Ave. at E. 11th St., then on Kenwood Ave. to E. 12th St.; single track built on Kenwood Ave. from E. 12th St. to E. 14th St. A loop was built at E. 14th St.

A wye was built at 45th Ave. E. and Superior St. during June.

1919

A spur track was built to the Duluth, Missabe & Northern Ry. tipple at 33rd Ave. W. and Superior St. so that crushed rock could be delivered direct from railroad cars to DSR work cars.

1921

The spur track at 34th Ave. W. and Superior St. was extended.

90 l.f. of track on W. 4th St. at 5th Ave. W. was abandoned.

A 1,000 l.f. spur track was constructed along E. 12th St. from Kenwood Ave. into a gravel pit near 10th Ave. E.

1922

716 l.f. of second track was added on Woodland Ave. eastward from Winona St. during July.

1923

Second track was added on E. 9th St. from 9th Ave. E. to 13th Ave. E. The loop at E. 9th St. and 13th Ave. E. was retained. An extension of this trackage, called the "East 8th St." line was built from this loop southesterly to E. 8th St. and east on E. 8th St. to Kent Road. Double track was built from E. 9th St. and 13th Ave E. to E. 8th St. and 19th Ave. E., with single track on E. 8th St. from 19th Ave. E. to Kent Road. All of this trackage was opened for service September 1st. Track in the E. 12th St. gravel it was altered slightly.

The wye on Lake Ave. at 8th St. on the "Park Point" line was removed.

1924

Second track was added on Kenwood Ave. from 12th St. to 14th St. New track was built on Kenwood Ave.: double track from the former loop at E. 14th St. to Allen Ave.; single track from Allen Ave. to St.Marie St. The loop at Kenwood Ave. and E. 14th St. was removed and a new loop built at Kenwood Ave. and St.Marie St. This work was completed September 1st.

Special work and necessary curves had been installed (October, 1923) to complete a wye at the intersection of 7th Ave. E. and E. 9th St. Permission was asked of the city council in May to lay 200 l.f. of spur track on the lower side of the Boulevard east from 10th Ave. E. to remove gravel from the pit for use in construction of the "Kenwood Ave." line extension.

364 l.f. of side track was removed on the "Highland Ave." line.

1925

Some tangent track was removed from the gravel pit at 10th Ave. E. and E. 12th St.

1926

Double track was built on 45th Ave. E. from Superior St. to Crosley Ave., and on Crosley Ave. to 47th Ave. E.; single track was built on Crosley Ave. from 47th Ave. E. to the intersection of 52nd Ave. E. and Glendale St. This was the last major track construction project in Duluth and utilized relay rail and wood overhead poles. This "Crosley Ave." line opened for service October 1st.

1927

To provide better service to the Amphitheater, Armory and Curling Club as well as to eliminate interruptions to regular service, the Armory Loop was constructed during July and August. Single track was built on 13th Ave. E., Jefferson St., and 14th Ave. E. connecting with existing track on E. Superior St. A passing track was located on Jefferson St.

1928

The car storage track (80 l.f.) west of the Lester River bridge on the "Lakeside" line was removed.

A loop was built during August replacing the wye at Lake Ave. and Morse St. in order to relieve congestion at the Aerial Bridge approach. The wye leg was removed in July 1929.

A gravel pit spur track was built at Kenwood Ave. and Cleveland St. The spur track at E. 12th St. and Kenwood Ave. was removed.

Second track was added on Woodland Ave. from the top of Hartley Hill (near Winona St.) to the Austin St. loop (approximately 3,600 l.f.) during July.

The last spur track near 32nd Ave. W. and Superior St. was installed.

1929

A loop was constructed at E. 4th St. and 27th Ave. E.

The wye at 32nd Ave. W. and Superior St. was replaced with a loop during July. The wye and spur track at 37th Ave. W. and Oneota St. were then removed. The car storage track along Jenswold St. at 34th Ave. W. was removed during July.

1930

A pull-in loop track was installed through the "West Yard" at the carhouse, between 27th Ave. W. and 28th Ave. W. on Superior St., completed May 19th. This was done to relieve traffic congestion on Superior St. before and after rush hour movements of a considerable number of cars.

The rebuilding of the Aerial Bridge into a lift-type span was completed early in the year. Double track was installed on the new 388 ft. lift span of the bridge and its 126 ft. approaches so that through service to and from Park Point could be operated. The first through cars, operating between Park Point and the loop at 8th Ave. W. and Superior St. began using the new track March 12th.

Abandonments

1930

With DSR in receivership the first abandonment of streetcar service took place. The very unprofitable "West 4th St." line on W. 4th St. from 5th Ave. E. to Mesaba Ave. ceased operating July 24th.

1931

Due to deficit operation and poor track, the "Park Point" line from Lake Ave. and Morse St. over the Aerial Bridge and on Lake Ave. and Minnesota Ave. to the end of the line on Park Point ceased operating June 15th.

On July 10th the second track on Lake Ave. from Michigan St. to Sutphin St. was removed. Only rush hour service was provided on Lake Ave. after abandonment of the "Park Point" line.

That segment of the "Lakeside" line on Superior St. from 45th Ave. E. to 61st Ave. E. (Lester Park) was abandoned August 26th. It was replaced by DSR's first two trolley buses which began operation October 4th.

1934

Track on Piedmont Ave. from Superior St. to W. 10th St. was abandoned May 10th.

The rail laid in 1903 in Superior St. between 3rd Ave. E. and 16th Ave. E. was badly deteriorated necessitating speed restrictions. When a paving project was scheduled DSTC chose to abandon the track instead of relaying it. On July 27th the track on Superior St. from 3rd Ave. E. to 24th Ave. E., including the Armory Loop, was abandoned. "Woodland" and "Crosley Ave." cars reverted to the E. 2nd St.-E. 4th St. routing and the track arrangement on 24th Ave. E. and Superior St. was altered to accommodate "Crosley Ave." cars.

A crossover was installed on 45th Ave. E. near Superior St. to allow for double-end shuttle car operation on the "Crosley Ave." line which began October 8th.

1935

The "Interstate" line between Duluth and Superior ceased operations June 5th. Track on Garfield Ave. from Superior St. to the Duluth-Superior Bridge was abandoned.

1936

The wye at 12th Ave. W. and Michigan St. which had been used for turning northbound "Interstate" line cars was removed.

The spur track to the rock bins at 33rd Ave. W. and Superior St. was also removed.

Track on Superior St. from 2nd Ave. E. to 3rd Ave. E., including the wye at 3rd Ave. E., was abandoned September 14th.

The "Kenwood Ave." line was abandoned August 31st. However a shuttle service on Kenwood Ave. from E. 9th St. to E. 12th St., where a crossover was installed, was begun February 21, 1937, using double-end Birney cars in order to supplement the insufficient number of buses, and continued until August 27, 1937. After that date track on Kenwood Ave. from 7th Ave. E. and E. 9th St. to St.Marie St. was completely abandoned.

When the "Woodland" line was re-routed in 1934 the main retail shopping district was by-passed. Superior St. merchants complained and agitated until DSR agreed to build two blocks of double track which would permit routing of cars via Superior St. through the business district. Double track was built on 2nd Ave. E. between Superior St. and E. 2nd St. and was referred to as the "2nd Ave. E. Loop". This was the last track ever constructed by DSR and surmounted the steepest grade: 10.65% between Superior St. and 1st St. and 10.17% between 1st St. and 2nd St. This track was placed in service November 12th.

1937

The "Gary-New Duluth" line was abandoned west of the Morgan Park Loop May 5th. However a wye was installed at the west gate of the cement plant near the Duluth, Missabe & Iron Range R.R. on Commonwealth Ave. and service restored June 6th to this wye.

1938

As only two or three trips per day were using the track on Lake Ave. from Superior St. to the ship canal, service ceased in March and the track was abandoned.

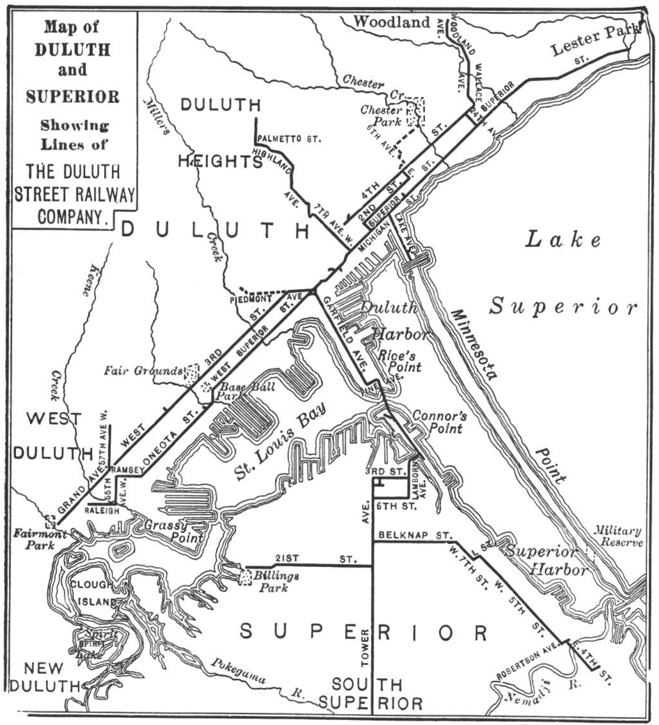
1939

The "West Duluth" line ceased operating March 13th. This involved abandonment of the track on Superior St. from 28th Ave. W. to Oneota, Ramsey, Central and Raleigh to 62nd Ave. W. Track on Superior St. from 21st Ave. W. to 28th Ave. W. was retained for carhouse access.

The branch line on 57th Ave. W. from Grand Ave. to Medina St. was abandoned May 2nd.

The remaining trackage, with the exception of the Incline Railway and "Highland Ave." line continued in use for the following lines until July 8th: "East 4th St.", "Woodland", "E. 8th St.", "Crosley Ave." and "West 3rd St.-Morgan Park-Gary-New Duluth". (The track on 24th Ave. E. from E. 4th St. to Superior St. and on Superior St. from 24th Ave. E. to 45th Ave. E. had been used only for carhouse access since 1934.) The last car to operate over these lines pulled into the carhouse at 2:30 a.m. July 9th, essentially ending streetcar service in Duluth.

The very last rail operation in Duluth ended on Labor Day, September 4th, when the 7th Ave. W. Incline Railway and the isolated "Highland Ave." line were abandoned.


Map of
DULUTH
and
SUPERIOR
Showing
Lines of
THE DULUTH
STREET RAILWAY
COMPANY.
Woodland
Lester Park
DULUTH
HEIGHTS
DULUTH
Lake
Superior
Duluth Harbor
Minnesota
Point
Rice's Point
Connor's Point
St. Louis Bay
WEST
DULUTH
Fair Grounds
Base Ball Park
Grassy Point
Fairmont Park
Billings Park
CLOUGH ISLAND
Spirit Lake
NEW
DULUTH
SUPERIOR
SOUTH
SUPERIOR
Superior Harbor
Military Reserve
Pokegama R.
Nemadji R.
Chester Cr.
Chester Park
Millers
Creek
Keene
Creek
PALMETTO ST.
HIGHLAND AVE.
7TH AVE. W.
4TH ST.
2ND ST.
SUPERIOR ST.
MICHIGAN ST.
LAKE AVE.
WOODLAND AVE.
WALLACE AVE.
24TH AVE.
6TH AVE.
E. ST.
PIEDMONT AVE.
3RD ST.
WEST SUPERIOR ST.
GARFIELD AVE.
RICE'S POINT AVE.
WEST
ONEOTA ST.
GRAND AVE.
57TH AVE W.
55TH AVE. W.
RAMSEY
RALEIGH
3RD ST.
6TH ST.
LAMBORN AVE.
TOWER AVE.
BELKNAP ST.
21ST ST.
W. 7TH ST.
W. 5TH ST.
ROBERTSON AVE.
E. 4TH ST.

Electric Ry. Journal

Duluth-Superior Traction—Map of Routes 1909

Street railways were built largely with manual labor and animal power. This track gang laid a new line at Piedmont and Fifth streets on the Duluth (Minn.) Street Railway in 1910. – *Collection of Wayne C. Olsen.*

Duluth Division Track Mileage
February 5, 1931

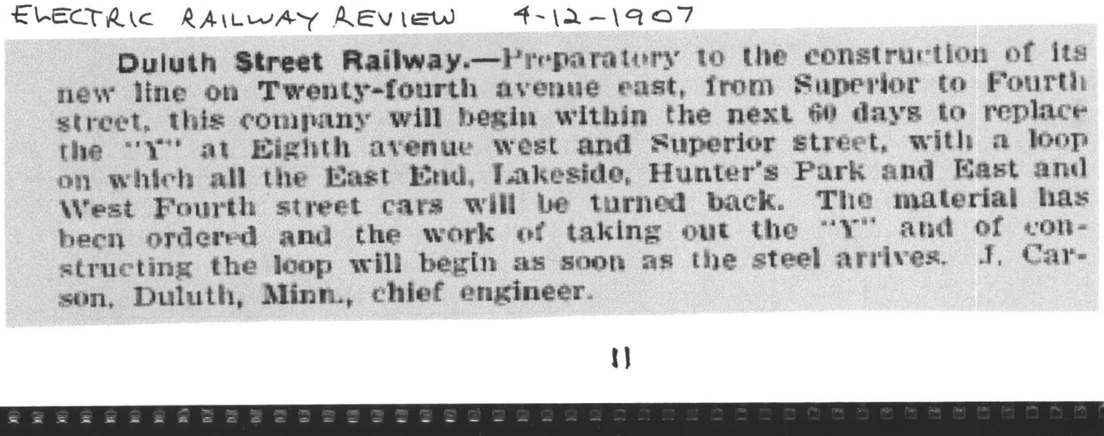
Line (From/To)	First Track	Second Track	Side Track	Total Track
Lakeside (11th Ave. W. & Michigan St./ Lester Park)	6.838	6.838	.216	13.892
West Duluth (11th Ave. W. & Michigan St./ 62nd & Raleigh)	4.839	4.821	2.717 (*)	12.377
Lake Ave. & Park Point (**) (Lake Ave. & Superior St./ 43rd St. & Minnesota Ave.)	4.137	.634	.329	5.100
Woodland (24th Ave. E. & Superior St./ Woodland Ave. & Austin St.)	3.417	3.417	.168	7.001
East 4th St. (3rd Ave. W. & Superior St./ E. 4th St. & 24th Ave. E.)	2.676	2.676	.076	5.428
West 4th St. (5th Ave. E./Mesaba Ave. W.)	(abandoned 1.1714)		.072	.072
Highland Ave.	1.859	.116	.022	1.997
Garfield Ave. (Superior St./D-S Bridge)	1.884	1.884	.079	3.847
West 3rd St. (21st Ave. W. & Superior St./ 71st Ave. W. & Grand)	4.381	4.381	.251	9.014
57th Ave. W. (Grand/Medina)	.775	.101	.031	.887
Morgan Park (71st Ave. W. & Grand/Morgan Park Loop)	3.5445	3.5445	.081	7.170
New Duluth (Morgan Park Loop/ McCuen St.)	2.843	1.273	.064	4.180
Incline Railway	.562	.562		1.125
East 9th St. (5th Ave. E. & E. 4th St./ E. 8th St. & Kent Road)	1.905	1.617	.069	3.592
Piedmont Ave. (Superior St./10th St.)	.988	.764	.068	1.821
Kenwood Ave. (7th Ave. E. & E. 9th St./ Kenwood & St.Marie)	1.692	1.344	.250	3.186
Crosley Ave. (45th Ave. E. & Superior St./ 52nd Ave. E. & Crosley)	1.611	1.072	.026	2.709
Jefferson St. Loop (Armory)	.177		.090	.268
Totals	44.110	34.946	4.611	83.668
Add: abandoned track on W. 4th St.				1.171
Peak track mileage				84.838

(*) Includes the carhouse trackage.

(**)		
(**)	Lake Ave. from Superior St. to Morse St.	0.63 miles of track
	Morse St. loop	0.11 miles of track

Track built in 1936 on 2nd Ave. E. from Superior St. to 2nd St. totaled .350 miles of track.

ELECTRIC RAILWAY REVIEW 4-12-1907



Duluth Street Railway.—Preparatory to the construction of its new line on Twenty-fourth avenue east, from Superior to Fourth street, this company will begin within the next 60 days to replace the "Y" at Eighth avenue west and Superior street, with a loop on which all the East End, Lakeside, Hunter's Park and East and West Fourth street cars will be turned back. The material has been ordered and the work of taking out the "Y" and of constructing the loop will begin as soon as the steel arrives. J. Carson, Duluth, Minn., chief engineer.

SUPERIOR

The horsecar lines of the Douglas County St. Ry. prior to electrification consisted of 3'6" gauge track on the following streets.
Tower Ave. from 3rd St. to 21st St.
From Belknap St. and Tower Ave. on Belknap St. to 7th St., on 7th St. to L Ave. (6th Ave.), on L Ave. to 5th St., and on 5th St. to 25th Ave. E.

Company correspondence dated September 13, 1889, and March 6, 1890, referred to adapting the 3'6" gauge trucks for Daft electric equipment using dual overhead trolley wires. An early newspaper account stated the first electric cars in 1890 had two-wire overhead; the single trolley pole had two wheels; each car had a crew of three (motorman, conductor, and trolleyman); and round trips were made from 3rd St. and Tower Ave. to 5th St. and 25th Ave. E. Strap rail and stringer track construction was used but in wet weather streets became mush causing frequent derailments; the work crew was re-railing cars from morning until night.

Contracts on file indicate the electrification of the existing lines to 3'6" gauge was performed by the Northwest Thomson-Houston Company. About three miles of track was electrified and in operation beginning July 1, 1890. The remaining track was electrified by the end of 1890. The 1890 U.S. Census reported that 5.43 miles of line, involving 6.00 miles of track was in operation, all using 35 lb. T rail.

Records of subsequent track construction are lacking. The mortgage papers filed August 13, 1892, upon acquisition by the Superior Rapid Transit Railway listed the following.
Double track on Tower Ave. from 3rd St. to 28th St.
Single track on 3rd St. from Tower Ave. to Lamborn Ave.
Double track on Belknap St. from Tower Ave. to 7th St., on 7th St. to L Ave. (6th Ave.), on L Ave. to 5th St., and on 5th St. to Newton Ave. (25th Ave. E.).
Single track on Broadway from Tower Ave. to Clough Ave.
Single track on 21st St. from Tower Ave. to New York Ave.
Total track was approximately 13.7 miles.

The construction consisted of 2" x 12" planks laid lengthwise on the red clay subsoil of the street grade; 3" x 8" pine ties were placed directly on the planks. 35 lb. T rail was then spiked to the ties. Cedar paving blocks were laid on the planks, with short blocks laid on the ties. These paving blocks proved to be a constant and expensive source of trouble due to the severe climate conditions.

Under the ownership of the Superior Rapid Transit Ry. additional track construction continued. The dates of actual construction are unknown in most instances. The only known date is for the double track on Tower Ave. from 28th St. to 61st St. opened for traffic September 14, 1892.

During May and June 1893 a 20' x 40' waiting station and a 25' x 60' platform and boat dock were built on Connor's Point.

Mortgage papers filed July 3, 1894, securing bonds purchased by the Central Trust Company of New York, indicated that the system consisted of 26 miles of track.

1. Double track on Main St. from Lamborn Ave. to Connor's Point.
2. Double track on N. 3rd St. from Lamborn Ave. to Tower Ave.
3. Double track on Tower Ave. from N. 3rd St. to Central Ave. (61st St.).
4. Single track on Tower Ave. from Central Ave. to 64th St.
5. Single track on Central Ave. from Tower Ave. to Hammond Ave.
6. Double track on Lamborn Ave. from N. 6th St. to Main St.
7. Double track on N. 6th St. from Tower Ave. to Lamborn Ave. (the 6th St. loop).

8. Double track on 21st St. from Tower Ave. to New York Ave.
9. Double track on Broadway from Tower Ave. to Catlin Ave., and on Catlin Ave. from Broadway to Belknap St.
10. Double track on Belknap St., W. 7th St., L Ave., and W. 5th St. from Tower Ave. and Belknap St. to 5th St. and Newton Ave.
11. Single track on W. 5th St. from Newton Ave. to Robertson Ave.

The additional trackage is estimated to have been constructed as follows.

1. Second track added on 3rd St. from Tower Ave. to Lamborn Ave.. New double track built on 6th St. from Tower Ave. to Lamborn Ave. and on Lamborn Ave. to 3rd St. New double track on Lamborn Ave., across the new Lamborn Ave. bridge, and on Bridge St. to Main St. and north on Main St. to Connor's Point. All of this work completed in late 1892.
2. Track built on Tower Ave. from Central Ave. (61st St.) to 63rd St., and on Central Ave. from Tower Ave. east to Hammond Ave., all during 1893. The mortgage papers cited above list this as all single track, but some DSR records indicate this as double track.
3. Second track added on Broadway from Tower Ave. to Clough Ave.. New single track built on Broadway from Clough Ave. to Catlin Ave., and on Catlin Ave. from Broadway to Belknap St. This work all performed during 1892. The mortgage papers cited above list this as all double track as well as do some later DSR records; however an old DSR map shows the track as first described.
4. Second track added on 21st St. from Tower Ave. to Wyoming Ave. except for single track on the viaduct over the railroad tracks between Butler Ave. and Scranton Ave. during 1893.
5. Single track built on E. 5th St. from Newton Ave. (25th Ave. E.) to Robertson Ave. (31st Ave. E.) during 1893.

The Duluth-Superior Bridge was completed in 1897 and DSR laid double track across the bridge to the foot of the Superior approach to the bridge. The "Interstate" line began regular operation across the bridge September 1, 1897. As SRTR track was still 3'6" gauge it was necessary for passengers to transfer between cars of the two companies at the bridge approach. SRTR soon realized that the difference in track gauge was a block to any compatible coordination of the "Interstate" line with DSR and that SRTR was missing its share of the lucrative interstate business. The solution was for SRTR to standard guage its line to Connor's Point. Financial difficulties forced a decision in November 1897 to delay trackwork until April 1, 1898. Trackage rebuilt from 3'6" gauge to 4'8½" gauge using 8" 74 lb. T rail was as follows.

1. Double track on Main St. from the Duluth-Superior bridge to Lamborn Ave., on Lamborn Ave. from Main St. to 3rd St., on 3rd St. from Lamborn Ave. to Tower Ave., and on Tower Ave. from 3rd St. to Belknap St.
2. Only the west track on Tower Ave. from Belknap St. to 21st St., and one track on Belknap St. from Tower Ave. to the carhouse at Catlin Ave. was modified for dual-gauge operation by the addition of a third rail at 4'8½" gauge.

The first operation of standard gauge cars occurred September 20, 1898. However it was not until March 28, 1899, that the first through service between Superior and Duluth began under a joint DSR-SRTR agreement. An equal number of cars was furnished by each company. Operation was from the terminus of the "East End" line in Duluth to 21st St. and Tower Ave. in Superior.

1900

The Ford, Bacon & Davis consulting engineers report provided the following information.

	Miles of Dbl. Trk.	Miles of Sgl. Trk.	Equivalent Sgl.Trk. Miles
1. 74 lb. 8" T rail	1.75	.50	4.00
2. 35 lb. T rail (track in pavement laid on wood stringers)	10.25	1.50	22.00
3. carhouse track			.50
Total track			26.50

1. included four double-track railroad crossings, three crossovers, two double-track curves, four single-track branch-offs, two turnout ends and one single-track curve.
2. included five crossovers, thirteen turnout ends, two single-track branch-offs, seven carhouse branch-offs, and fifteen single-track railroad crossings (which used 56 to 65 lb. T rail).

Ford Bacon & Davis recommended that the 35 lb. T rail should immediately be replaced with first class construction, except on the Steel Plant and South Superior lines where traffic was light. They also recommended that the Tower Ave. line operating around the 6th St. loop and the Broadway line be abandoned as this traffic could be handled by regular service on other lines.

During August through December DSR made necessary repairs previous to reconstruction of the South Superior line on Tower Ave., Steel Plant line, Broadway line, and the 6th St. loop. Track from Main St. and Bridge St. to Connor's Point on the "Interstate" line, 2.5 miles, was relaid with 5" 80 lb. T rail. A test track, consisting of double track laid in concrete, was constructed on Belknap St. from Catlin Ave. 653 l.f. eastward. Another source states the north track was 8" T rail bolted to concrete beams laid on Belknap St. from Catlin Ave. to 178 l.f. west of Poplar Ave.

1901

Apparently DSR considered the system as over-built and went before the Superior city council to obtain permission to reduce the amount of trackage. In a re-negotiated franchise of August 1901 the city council ordered certain work done, all of which was to be completed by November 1, 1902. All of the construction described here under the headings 1901 and 1902 was done under the provisions of that city ordinance.

Special work and necessary curves were installed to create a wye at the intersection of Tower Ave. and Belknap St.

Frequent and prolonged delays resulting from the openings of the Lamborn Ave. bridge and the Duluth-Superior bridge prompted the building of a wye at Main St. and Lamborn Ave. (Bridge St.) placed in service June 20th.

One track was removed on the 6th St. loop while the other track was changed from 3'6" gauge to 4'8½" gauge. (On 6th St. and Tower Ave. to Lamborn Ave.--later Grand Ave.--and on Lamborn Ave. from 6th St. to 3rd St.)

The three-rail dual gauge track on Belknap St. from Tower Ave. to Catlin Ave. (4,050 l.f.) was repaired. Trackwork at the Catlin Ave. carhouse was also repaired.

Track on Broadway from Tower Ave. to Catlin Ave. and on Catlin Ave. from Broadway to Belknap St. was abandoned and removed.

The 3'6" gauge double track (3.95 track miles) from Belknap St. and Tower Ave., on Belknap St., 7th St., L Ave., and 5th St. to 5th St. and Newton Ave. (25th Ave. E.) was removed and replaced with 4'8½" gauge single track, the south track, using 70 lb. T rail. Temporary track, gauge not specified, was used to maintain traffic during reconstruction. This also involved temporary special work at Tower Ave. and Belknap St. and at Belknap St. and Catlin Ave. Turnouts, involving seven switches, were located at Poplar Ave., connecting new track with the test track constructed in 1900; on 7th St., L Ave., and 5th St., from 75 l.f. east of Hill Ave. to 152.5 l.f. east of L Ave.; a 619.67 l.f. siding on 5th St. with its center on Division Ave.; and a 490 l.f. siding with the east switch point 199 l.f. west of Newton Ave.

The 3'6" gauge single track on 5th St. from Newton Ave. to Robertson Ave. was changed to 4'8½" gauge single track using the existing 35 lb. T rail.

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1902

Second track, 4'8½" gauge, the north track, was added on Belknap St., 7th St., L Ave., 5th St. from Tower Ave. and Belknap St. to 5th St. and Newton Ave. The single track on 5th St. from Newton Ave. to Robertson Ave. was re-laid with 70 lb. T rail. New single track was built on Robertson Ave. from 5th St. to 4th St.

The Steel Plant line was rebuilt from 3'6" guage double track to 4'8½" single track. However double track was retained on 21st St. from Tower Ave. to Wyoming Ave., except for single track on the railroad viaduct between Butler Ave. and Scranton Ave. New single track was built from 21st St. and New York Ave. (the existing end of the line) on an easement alongside the street obtained in June from the estate of Frederick W. Billings (former president of the Northern Pacific Ry.) to the gates of the Town & Country Club grounds.

The South Superior line track on Tower Ave. from 21st St. to 61st St. was rebuilt from 3'6" gauge double track to 4'8½" gauge single track. One 3'6" gauge track from 21st St. to 63rd St. was removed and one 4'8½" gauge track installed from 21st St. to 61st St. The narrow gauge cars used the remaining track until the standard gauge track was completed. On July 9th the last operation of narrow gauge cars took place, with subsequent removal of the 3'6" gauge track on Tower Ave. from Belknap St. to 63rd St. Track was also removed on 61st St. from Tower Ave. to Hammond Ave. One siding was built on Tower Ave. south of 21st St. Special work was installed to create a wye at the intersection of 21st St. and Tower Ave.

Single track was built on 4th St. from Tower Ave. to Ogden Ave. and on Ogden Ave. from 4th St. to 3rd St. to provide access to the new carhouse under construction at 4th St. and Ogden Ave.

1903

The existing single track on the 6th St. loop was re-laid with 74 lb. T rail.

New rail was installed on Catlin Ave. and Belknap St. when the switches leading into the old carhouse were removed.

A wye was built at 4th St. and Robertson Ave.

Second track, the east track, was added on Tower Ave. from Belknap St. to 21st St. using 7" 70 lb. T rail.

Single track was built on Tower Ave. from 61st St. to 64th St.. This work was to have been done during 1902 as part of the work ordered by the city council but work on crossing the Northern Pacific Ry. tracks south of 61st St. delayed construction until this year.

Single track was extended into Billings Park (on the Steel Plant line) and a loop with a siding built on a parcel of land over which an easement had been obtained from the Billings estate in October. The line was then re-named the Billings Park line.

1904

The siding on the Billings Park loop was removed.

The wye at Catlin Ave. and Belknap St. was extended.

A crossover at Broadway and Tower Ave. was removed.

After completion of this work the total track in Superior was 21.55 miles.

1905

A wye was built at 63rd St. and Tower Ave.

1906

A second siding was installed on Tower Ave. This provided two sidings on this line. One was 590 l.f. long, located between 1,730 ft. and 2,320 ft. south of 28th St. (equivalent to between 32nd and 33rd St.). The other was 310 l.f. long, located between 6,090 f. and 6,400 ft. south of 28th St. (equivalent to between 42nd St. and 43rd St.). (There were no platted cross streets on Tower Ave. between 28th St. and 52nd St.)

1907

Single track was built on E. 4th St. from Robertson Ave. (31st Ave. E.) to McBain Ave. (38th Ave. E.) and on McBain Ave. to E. 2nd St. This was called the "Allouez" extension of the "East End" line. Second track was added on Robertson Ave. from E. 5th St. to E. 4th St.

1909

A siding was installed at 28th St. and Tower Ave.

1910

Second track was added on Tower Ave. from 21st St. to 28th St., completed June 1st.

1911

A 500 l.f. spur track was built alongside the Soo Line Ry. tracks at Belknap St. and Spruce Ave. March 17th. This was for use in unloading ties and rail for rebuilding the South Superior line.

The South Superior line on Tower Ave. south of 28th St. was relaid with heavier rail during the summer. The two existing sidings were removed and replaced with one new siding located at 46th St.

1916

The siding at 46th St. and Tower Ave. was extended and a loop constructed during June, 950 l.f. of track, when the Fairgrounds complex was developed there.

1917

Second track was added on E. 5th St. from 26th Ave. E. to Robertson Ave. (31st Ave. E.).

The "Broadway" line was built and opened for service July 1st. This consisted of double track, except for single track segments on Winter St. and Hill Ave., on Broadway from Tower Ave. to Catlin Ave., on Catlin Ave. to Winter St., on Winter St. (unimproved) to Hill Ave., and on Hill Ave. to a junction with existing track on Belknap St.

1918

The wye at Main St. and Lamborn Ave. was relocated October 23rd to the south approach of the Duluth-Superior bridge because of fire damage to the Duluth approach.

1920

Passing sidings were installed on Tower Ave. at 35th St. (500 l.f.) and at 57th St., July 8th. Two sets of Nachod block signals were also installed. As of January 1, 1927, there were three sets of Nachod signals on Tower Ave. between 3rd St. and 64th St.

Operation on the 6th St. loop had been counter-clockwise. The track layout was changed to allow for clockwise operation.

1921

Single track was built on 21st St. from Tower Ave. east to Grand Ave., opened for service January 1, 1922.

1925

A loop was installed during July at E. 5th St. and 24th Ave. E.

A loop replaced the wye at 63rd St. and Tower Ave.

1928

The "Allouez" line as built crossed the Nemadji River over a 2,600 ft. timber trestle on E. 4th St. In 1924 the trestle was declared unsafe resulting in the use of Birney cars and the lightweight cars in a variety of ways including shuttle operation. After October 31, 1928, no streetcars were allowed over the trestle. The track was then relocated on E. 2nd St. A new bridge, fill, and roadway were ~~was~~ constructed with side-of-the-road track on E. 2nd St. from 31st Ave. E. to 37th Ave. E. This new track was opened for service November 29th and the old track abandoned. This was the last major track construction project in Superior.

1929

On the "Billings Park" line the 21st St. bridge was extended to eliminate grade crossings of the Northern Pacific Ry. and Duluth, South Shore & Atlantic Ry. DSR laid new double track on the new bridge extension, making the track on 21st St. double track from Tower Ave. to Wyoming Ave. The bridge opened January 1, 1930.

Abandonments

DSR entered receivership in 1930 which factor combined with the rapidly declining patronage on the Superior lines, the decision was made to replace all streetcars with buses.

June 25th, 1931

1. The 6th St. loop track.
2. "Broadway" line: track on Broadway, Catlin Ave., Winter St., and Hill Ave. from Tower Ave. to Belknap St.
3. "South Superior" line: Tower Ave. from 21st St. to 63rd St. The Tower Ave. and Broadway intersection track was retained for wyeing cars. The line was temporarily re-opened to the Fairgrounds loop at 46th St. from September 6th through 11th for the State Fair.

1935

A severe ice storm occurred March 5th and most of the trolley wire on the "Allouez" line fell to the street. Service was never resumed on the segment from 31st Ave. E. and E. 4th St. to 38the Ave. E. and E. 2nd St. and that track was abandoned.

The "Interstate" line between Duluth and Superior ceased operating June 5th resulting in abandonment of the following track.
1. From the Duluth-Superior bridge on Main St., Lamborn Ave., 3rd St., and Tower Ave. to 21st St.
2. 21st St. from Tower Ave. to Grand Ave.
3. 21st St. from Tower Ave. to Billings Park.
4. Carhouse tracks and connecting track on 4th St. and Ogden Ave.
Street paving projects were the cause of these abandonments.

The last line in Superior, the "East End" line was then operated as an isolated piece of trackage. The wye at Catlin Ave. and Belknap St. was used to turn, store and service the cars. The west end of the line operated to Tower Ave. and Broadway but as the paving contractor progressed the operation was cut back to Tower Ave. and Belknap St. The east end of the line operated to E. 4th St. and 31st Ave. E. The last full day of operation was June 23rd. Lightweight car #301 made the last run pulling in to the Catlin Ave. and Belknap St. wye at 1:10 a.m. Monday morning, June 24th.

Superior Division Track Mileage
February 5, 1931

Line	First Track	Second Track	Side Track	Total Track
South Superior (main line)	5.086	2.387	.252	7.725
Billings Park	1.723	1.087	.019	2.829
Duluth (Interstate)	1.632	1.632	.078	3.342
6th St. loop	.764			.764
Carhouse loop	.175			.175
East End-Allouez	4.790	4.002	.323	9.115
Broadway	1.851	1.154	.081	3.087
21st Street	.998	.105		1.089
Totals	17.007	10.366	1.447	28.801

Summary: Total Track

Duluth Division	84.838 miles
Superior Division	28.801 miles
Total	113.639 miles

Duluth and Superior
Total Track Mileage at End of Year

Duluth

1882	1.00 miles
1883	1.00
1884	1.23
1885	1.67
1886	2.99
1887	3.25
1888	4.22
1889	4.22
1890	19.40 miles
1891	20.53
1892	28.93
1893	28.93
1894	30.60
1895	30.60
1896	36.10
1897	36.10
1898	36.10 miles
1899	36.10
1935	65.98
1936	63.71
1937	61.15
1938	60.58

Duluth and Superior

	Duluth	Superior	Total
1900	48.80	26.00	74.80
1901	48.80	23.40	72.20
1902	49.51	21.55	71.06
1903	49.51	21.55	71.06
1904	49.509	21.553	71.062
1905	50.93	21.55	72.48
1906	51.70	21.57	73.27
1907	53.47	21.57	75.04
1908	53.47	22.67	76.14
1909	55.24	22.75	77.99
1910	54.96	23.53	78.49
1911	56.89	23.54	80.43
1912	58.88	23.54	82.42
1913	58.93	23.54	82.47
1914	58.96	23.54	82.50

	Duluth	Supeior	Total
1915	60.22	23.54	83.76
1916	65.47	23.72	89.19
1917	76.56	27.32	103.88
1918	76.70	27.32	104.02
1919	76.77	27.32	104.09
1920	76.77	27.51	104.28
1921	76.96	28.61	105.57
1922	77.20	28.63	105.83
1923	79.01	28.63	107.64
1924	81.04	28.69	109.67
1925	81.04	28.69	109.73
1926	83.67	28.69	112.36
1927	83.92	28.69	112.62
1928	84.56	28.80	113.36
1929	84.84	28.80	113.64
1930	84.84	28.80	113.64

1902 U.S. Census
Duluth and Superior Combined
12-31-1901

First track 38.24 miles, second track 30.70 miles, sidings and carhouse track 1.76 miles, and total track 70.70 miles. (21.90 IN WISCONSIN)

1907 U.S. Census
Duluth and Superior Combined
12-31-1907

First track 42.50 miles, second track 29.04 miles, sidings and carhouse track 3.56 miles, and total track 75.10 miles. Of this total, 1.13 miles was operated by a combination of electric traction and counterweight inclined cable.

1902 U.S. CENSUS

SPAN WIRE	36.76 MILES
SIDE BRACKET	1.29 MILES
CENTER POLE	.19 MILES
TOTAL	38.24 MILES

1 WOOD BRIDGE 60LF

1907 U.S. CENSUS

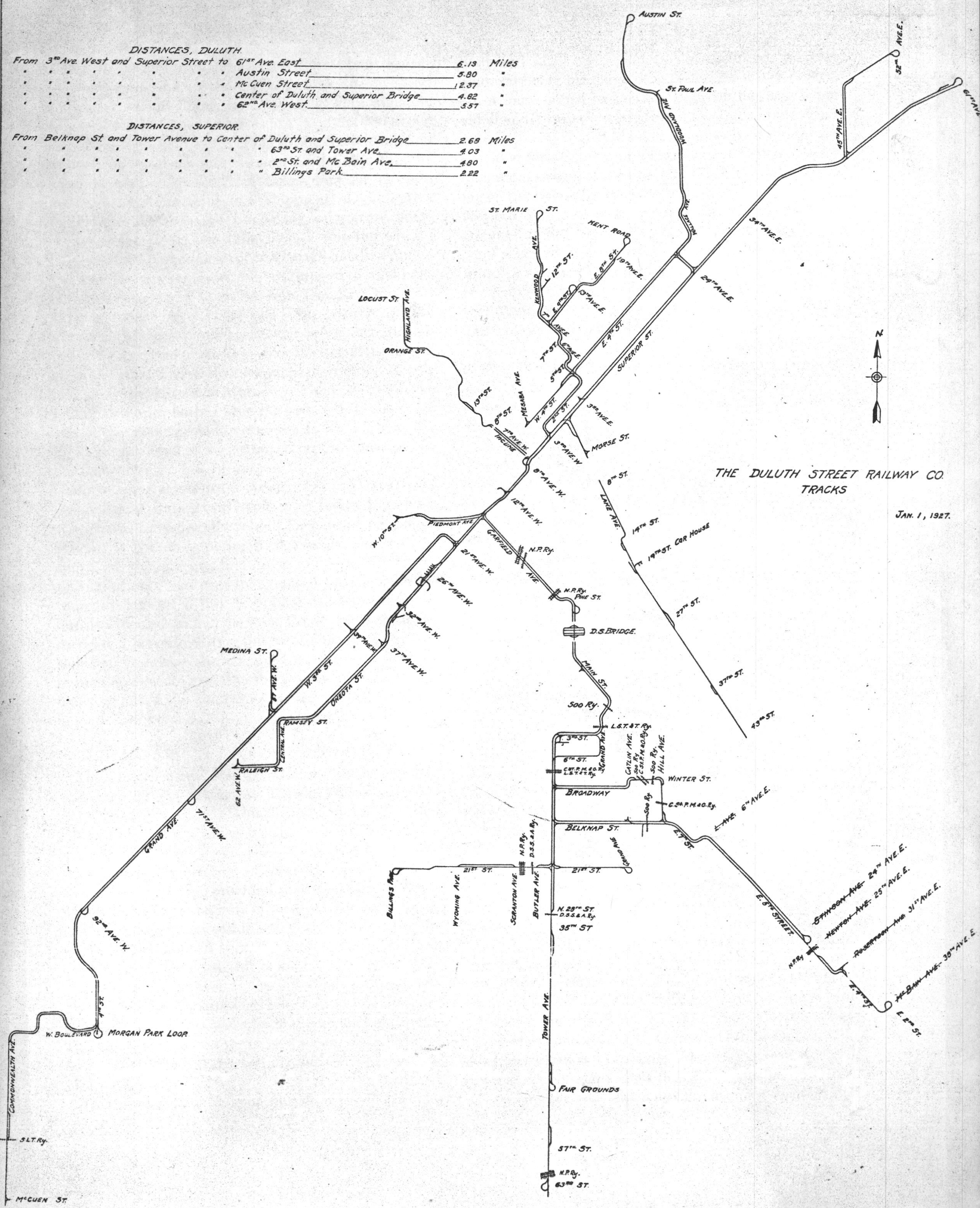
SPAN WIRE	41.80 MILES
SIDE BRACKET	0.56 MILES
CENTER POLE	0.14 MILES
TOTAL	42.50 MILES

DISTANCES, DULUTH

From 3rd Ave. West and Superior Street to	61st Ave. East	6.13	Miles
" "	Austin Street	5.80	"
" "	Mc Cuen Street	12.37	"
" "	Center of Duluth and Superior Bridge	4.82	"
" "	62nd Ave. West	5.57	"

DISTANCES, SUPERIOR

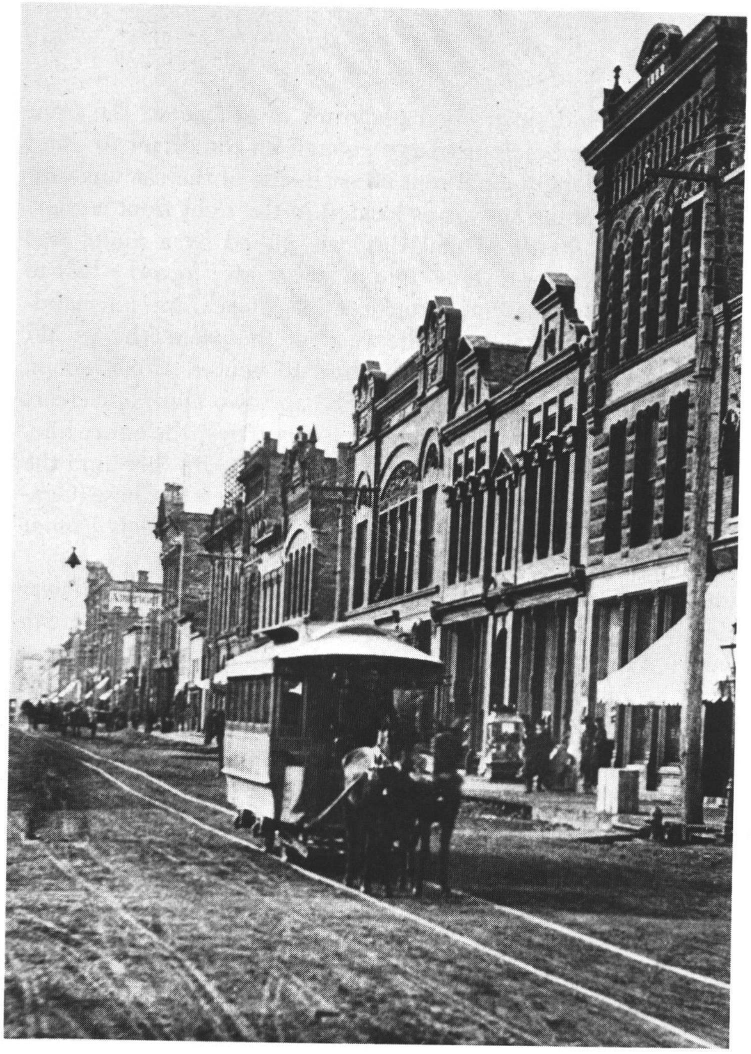
From Belknap St. and Tower Avenue to	Center of Duluth and Superior Bridge	2.68	Miles
" "	63rd St. and Tower Ave.	4.03	"
" "	2nd St. and Mc Bain Ave.	4.80	"
" "	Billings Park	2.22	"



THE DULUTH STREET RAILWAY CO.
TRACKS

JAN. 1, 1927.

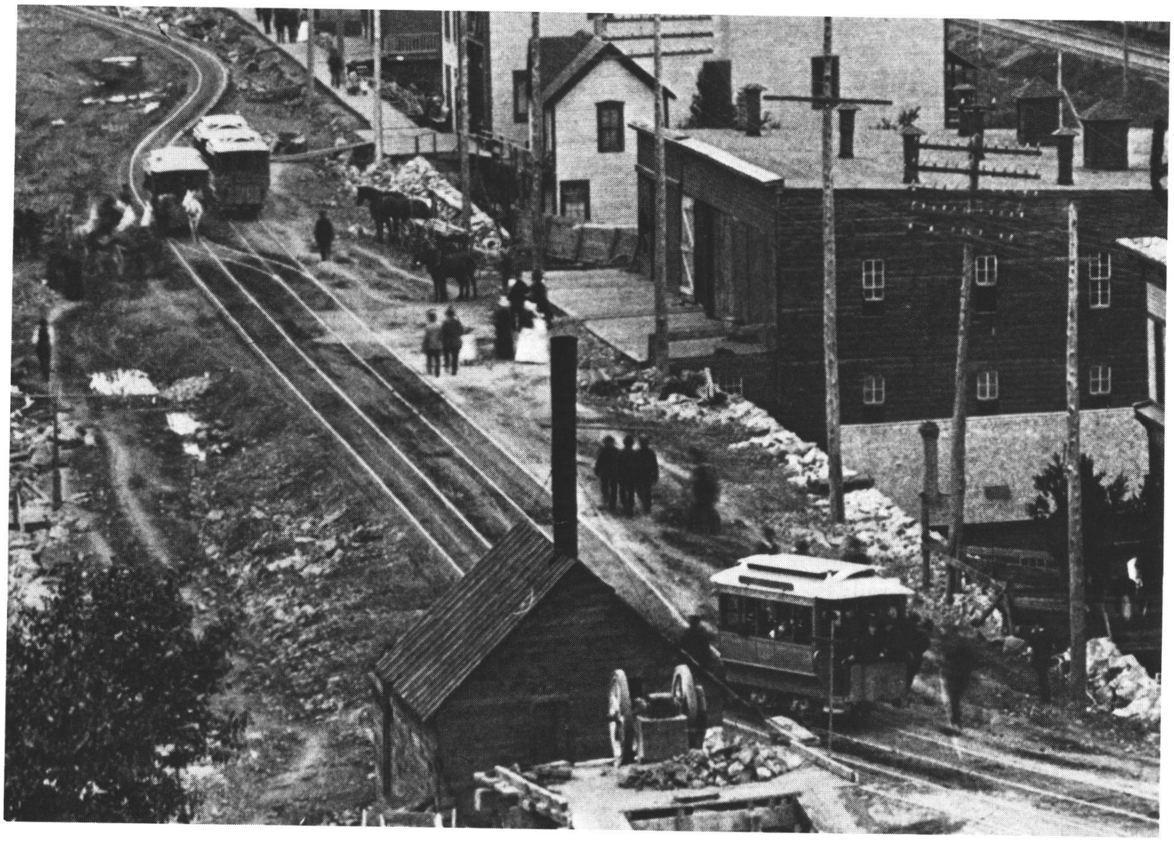
AUSTIN ST.
52nd AVE. E.
61st AVE.
ST. PAUL AVE.
WOODLAND AVE.
45th AVE. E.
WALLACE AVE.
34th AVE. E.
24th AVE. E.
ST. MARIE ST.
KENT ROAD
KENWOOD AVE.
12th ST.
E. 8th ST.
19th AVE. E.
E. 9th ST.
13th AVE. E.
7th AVE. E.
7th ST.
6th AVE. E.
5th ST.
E. 4th ST.
SUPERIOR ST.
N
LOCUST ST.
HIGHLAND AVE.
ORANGE ST.
13th ST.
8th ST.
MESABA AVE.
W. 4th ST.
2nd ST.
3rd AVE. E.
7th AVE. W.
INCLINE
3rd AVE. W.
MORSE ST.
8th AVE. W.
12th AVE. W.
W. 10th ST.
PIEDMONT AVE.
GARFIELD AVE.
N.P. Ry.
N.P. Ry.
PINE ST.
21st AVE. W.
26th AVE. W.
32nd AVE. W.
39th AVE. W.
37th AVE. W.
D.S. BRIDGE
8th ST.
LAKE AVE.
14th ST.
19th ST. CAR HOUSE
27th ST.
37th ST.
43rd ST.
MEDINA ST.
61 AVE. W.
W. 3rd ST.
OÑEOTA ST.
RAMSEY ST.
CENTRAL AVE.
RALEIGH ST.
62 AVE. W.
MAIN ST.
500 Ry.
L.S.T. & T. Ry.
3rd ST.
6th ST.
GRAND AVE.
C. ST. P. M. & O. Ry.
L.S.T. & T. Ry.
CATLIN AVE.
500 Ry.
C. ST. P. M. & O. Ry.
500 Ry.
HILL AVE.
WINTER ST.
BROADWAY
500 Ry.
C. St. P. M. & O. Ry.
L AVE.
6th AVE. E.
BELKNAP ST.
E. 7th ST.
71st AVE. W.
GRAND AVE.
N.P. Ry.
D.S.S. & A. Ry.
21st ST.
21st ST.
GRAND AVE.
BILLINGS PARK
WYOMING AVE.
SCRANTON AVE.
BUTLER AVE.
N. 28th ST.
D.S.S. & A. Ry.
35th ST.
E. 8th STREET
~~STINSON AVE.~~ 24th AVE. E.
~~NEWTON AVE.~~ 25th AVE. E.
~~ROBERTSON AVE.~~ 31st AVE. E.
~~Mc BAIN AVE.~~ 38th AVE. E.
N.P. Ry.
E. 4th ST.
E. 2nd ST.
92nd AVE. W.
4th ST.
W. BOULEVARD
MORGAN PARK LOOP
COMMONWEALTH AVE.
TOWER AVE.
FAIR GROUNDS
S.L.T. Ry.
57th ST.
N.P. Ry.
63rd ST.
Mc CUEN ST.



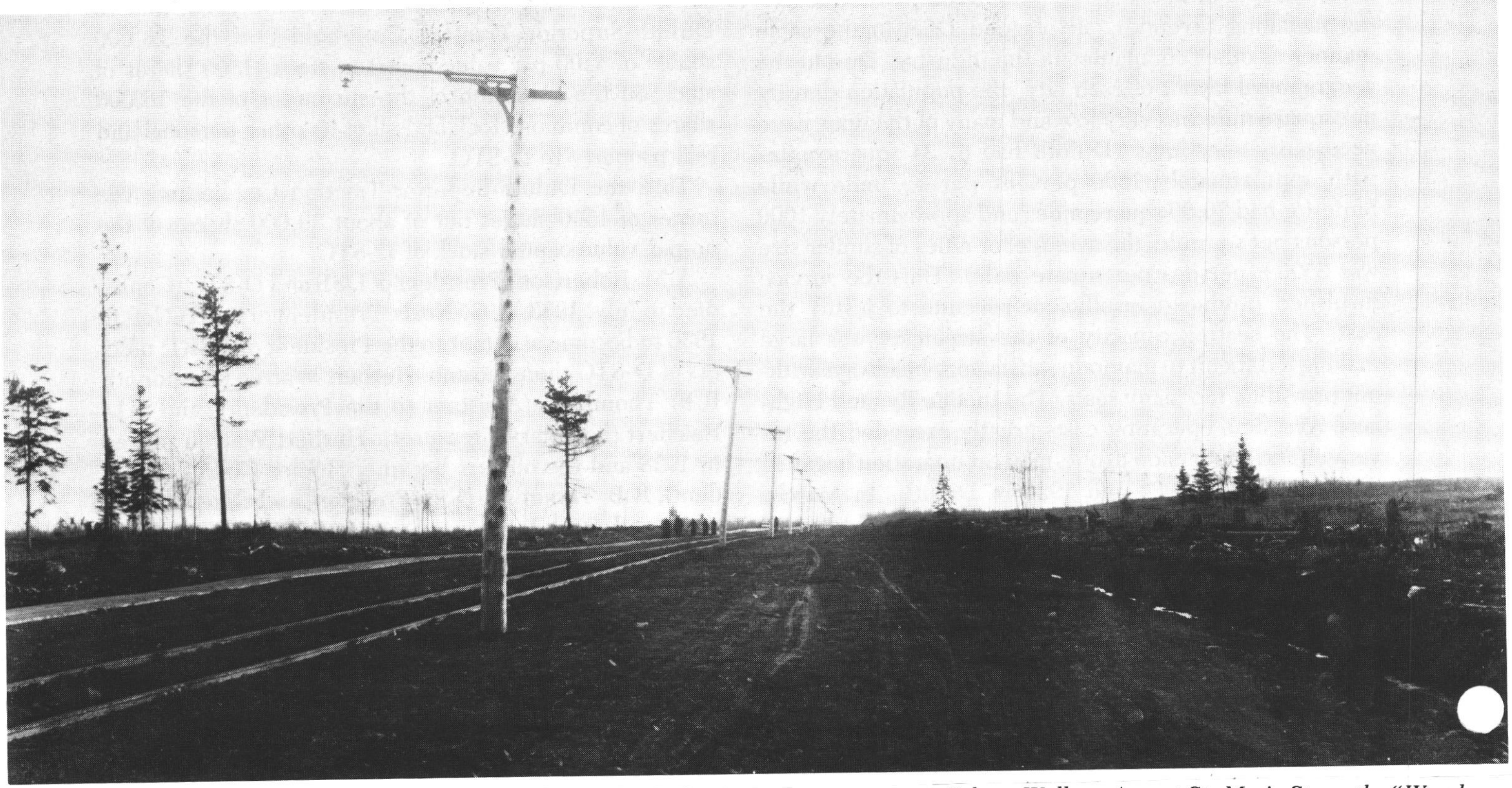
Left: Looking west on Superior St., Duluth, at Lake Ave. about 1886.

The two story frame structure at center right is the horsecar barn at 11th Ave. W. and Michigan St. Note the rock crusher at lower right, located at 12th Ave. W.

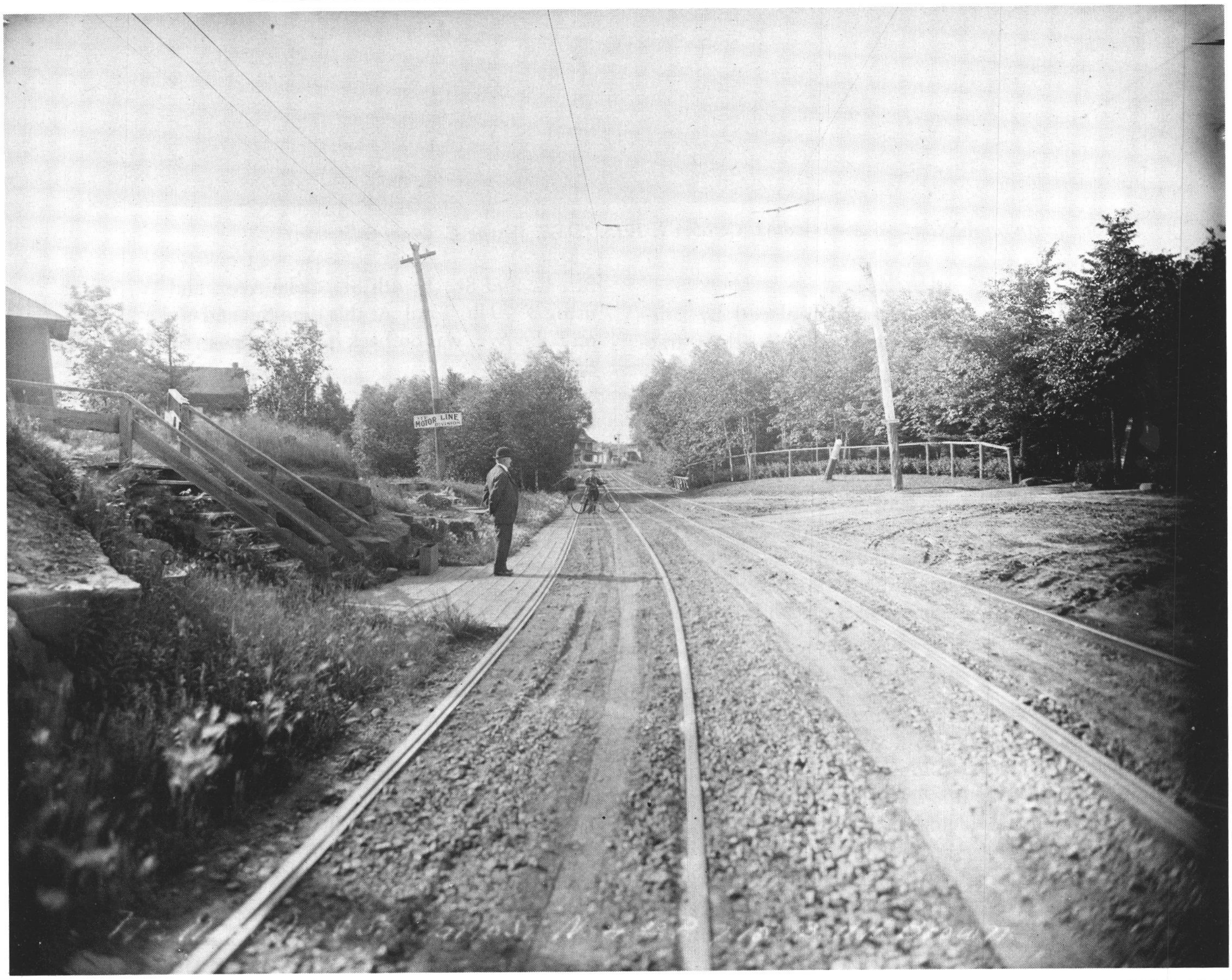
(Both photographs Wayne C. Olsen collection)

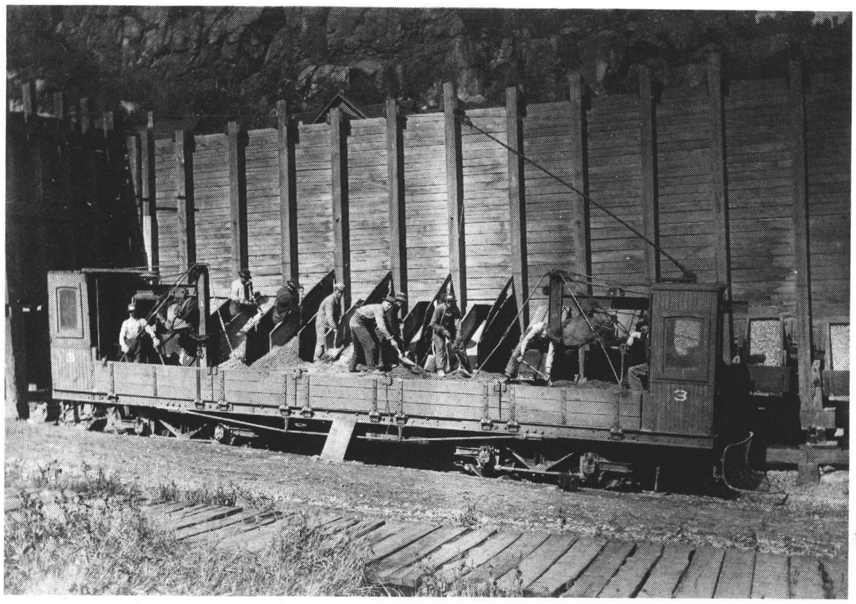


The original single track line of the Motor Line Improvement Co. on Woodland Ave., November, 1890. (Wayne C. Olsen collection)

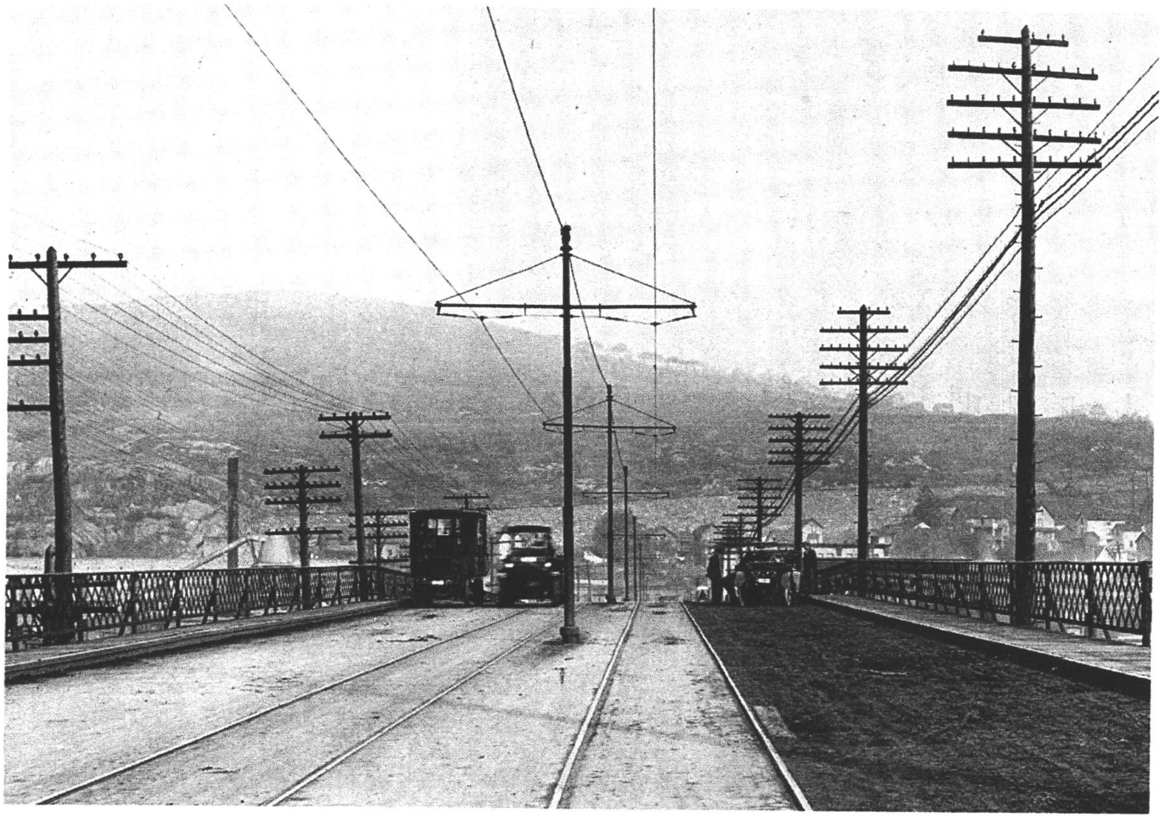


Below: Wallace Ave. at St. Marie St. on the "Woodland" line, July 15, 1913. The sign on the overhead pole reads "The Motor Line Division".

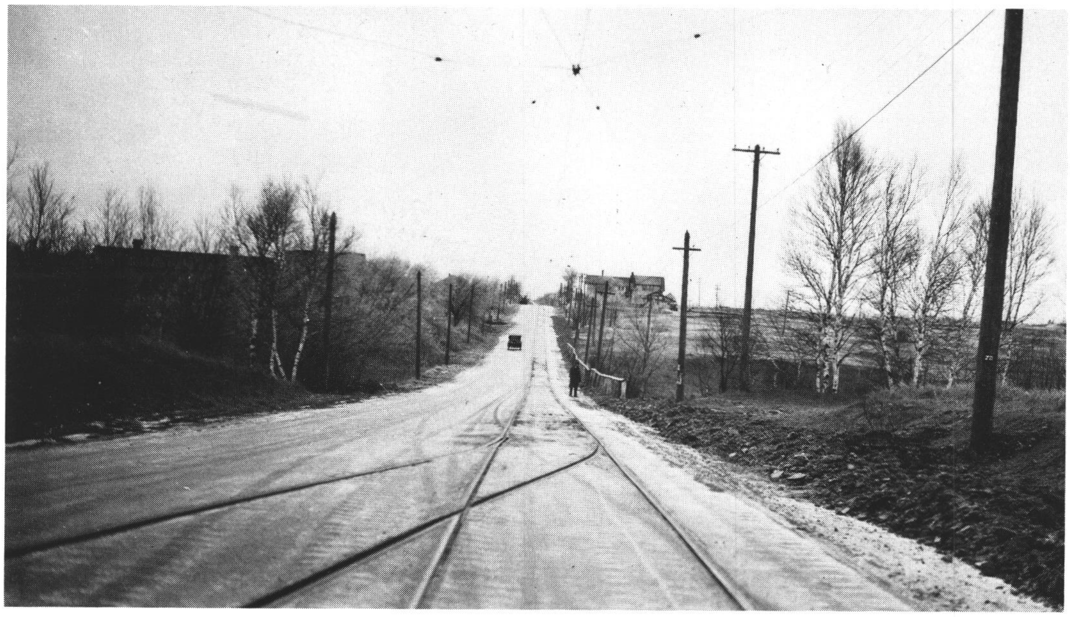




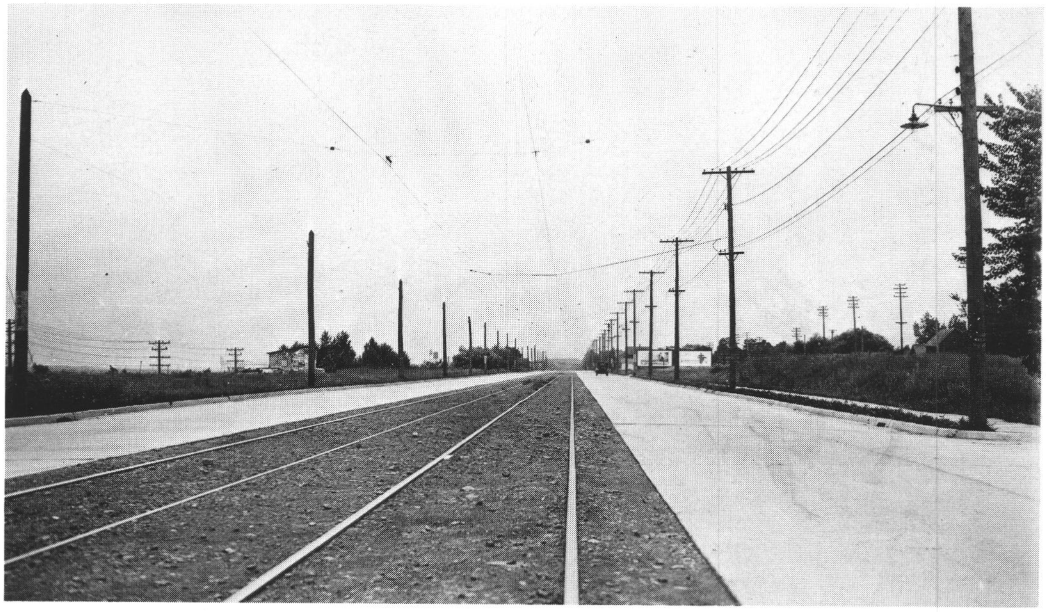
Left: Flat Car 3 loading crushed rock from the quarry bins at 12th Ave. W. and Michigan St., 1912.



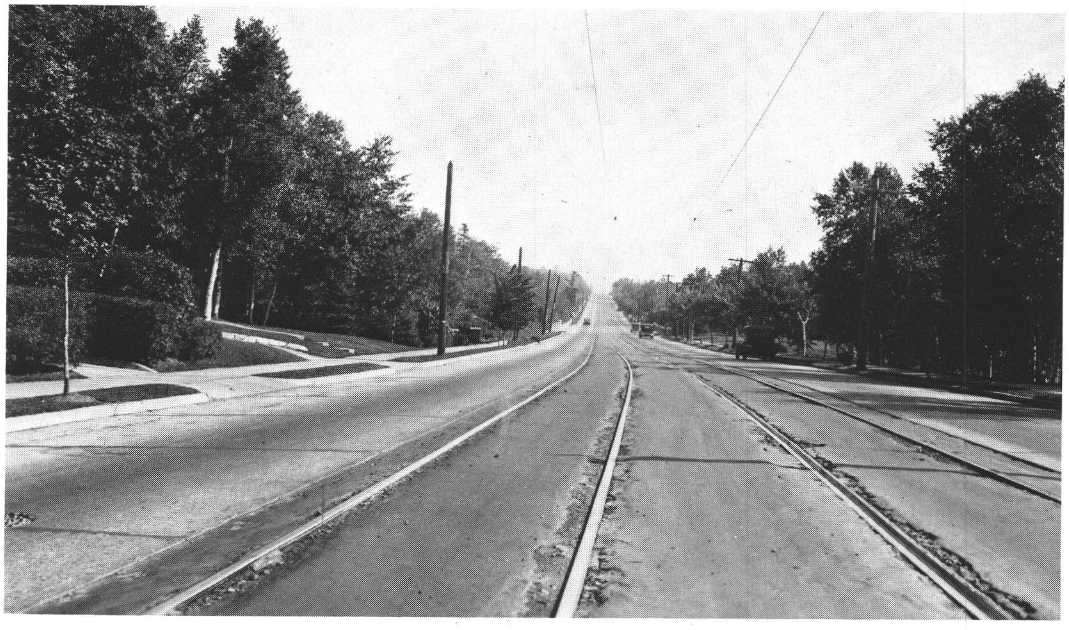
Looking north on the Garfield Ave. viaduct, October 1, 1915. (DSR; Wayne C. Olsen collection)



The end of double track on Kenwood Ave. near Villa, February 17, 1931.

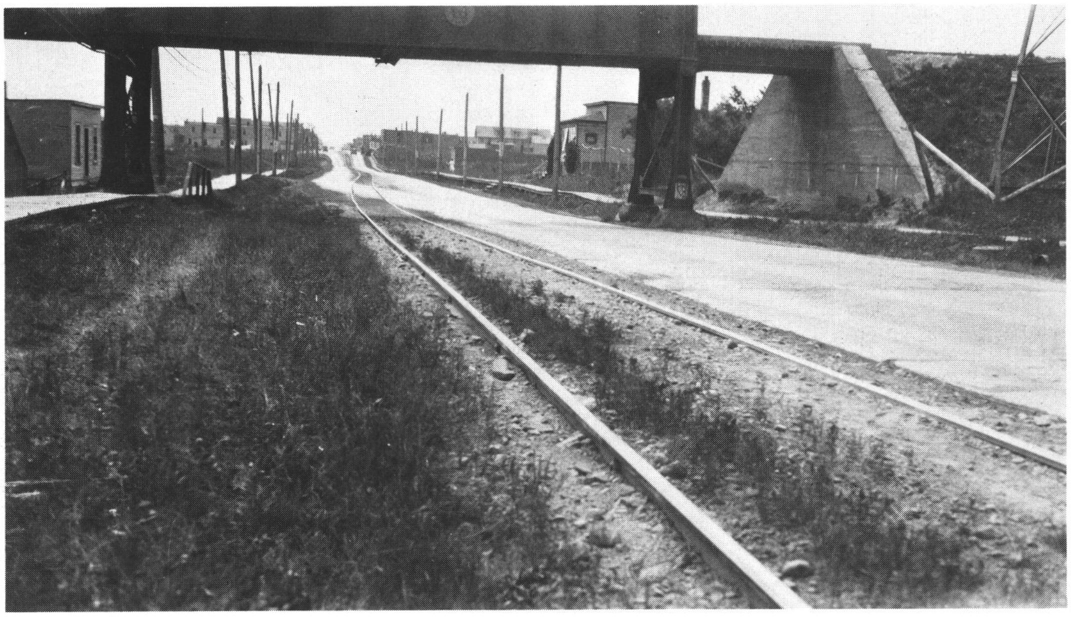


Oneota St. looking west from 41st Ave. W.

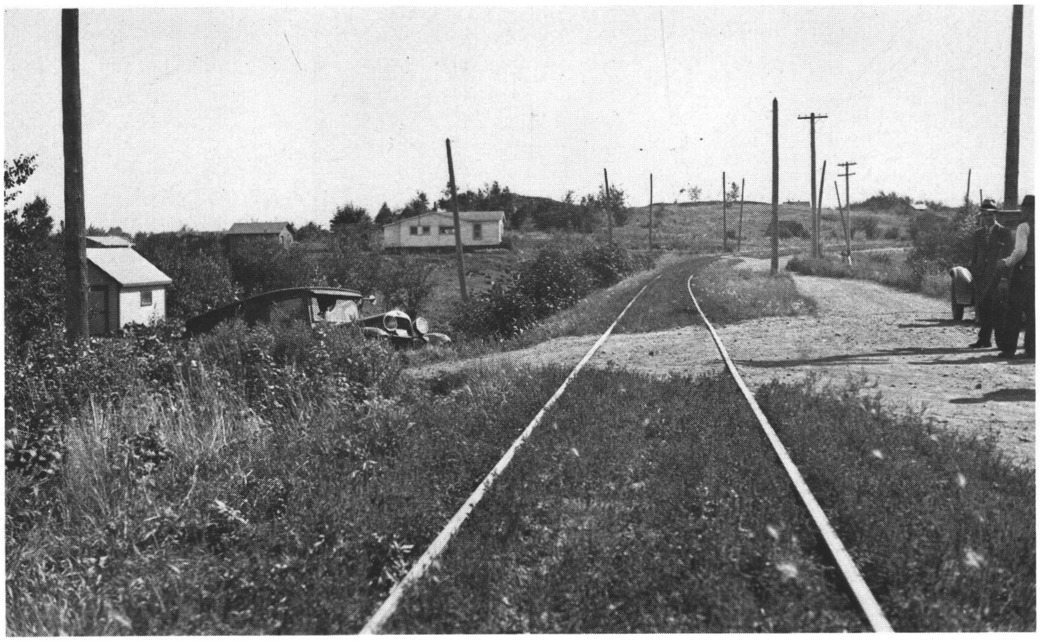


31st Ave. E. and Superior St., September 8, 1931.

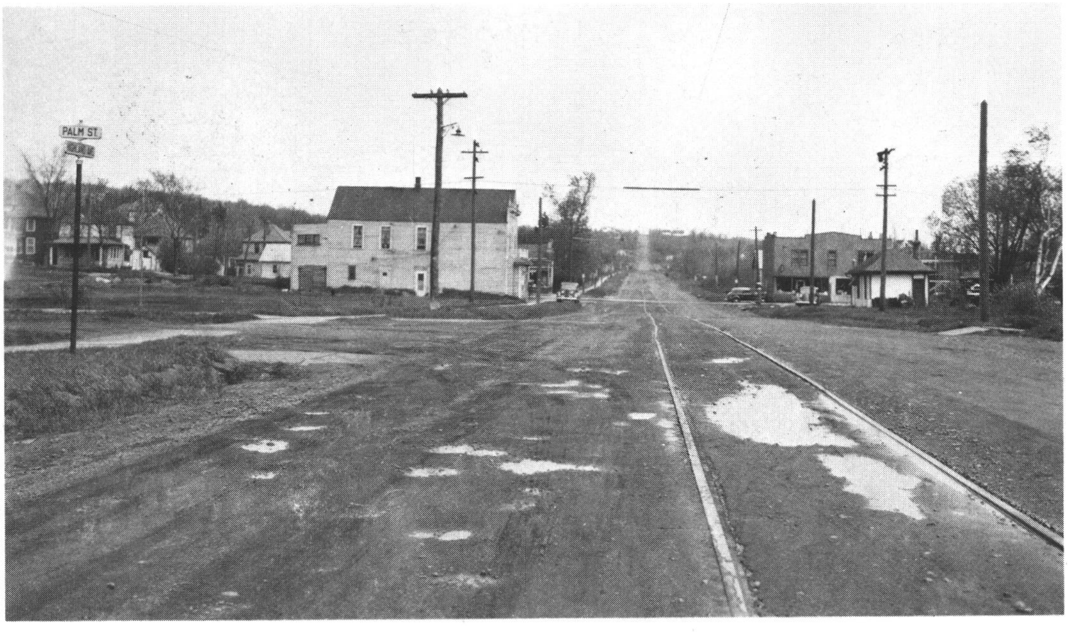
(All photographs DSR; Wayne C. Olsen collection)



Looking south on Commonwealth Ave. toward New Duluth at the D.M. & I.R.R.R. bridge.



On the "Highland Ave." line, looking east at Arlington Ave., September 10, 1935.



Highland Ave. and Palm St., looking north, May 27, 1938.

(All photographs DSR; Wayne C. Olsen collection)

Street Railway Journal
Directory

Duluth St Ry 11-1896

48.10 miles electric 1.13 miles cable

45, 60# girder and T rail

71 cars (64 motor, 2 cable, 3 trailer) LaClede Northern

Lakeside Ry. 4-1896

7.5 miles 45# T rail 6 motor cars

Motor Line Improvement Co. 11-1896

5.96 ~~6 miles~~ 45# T rail 4 motor cars (DSR?) LaClede

5.96

Superior Rapid Transit Ry.

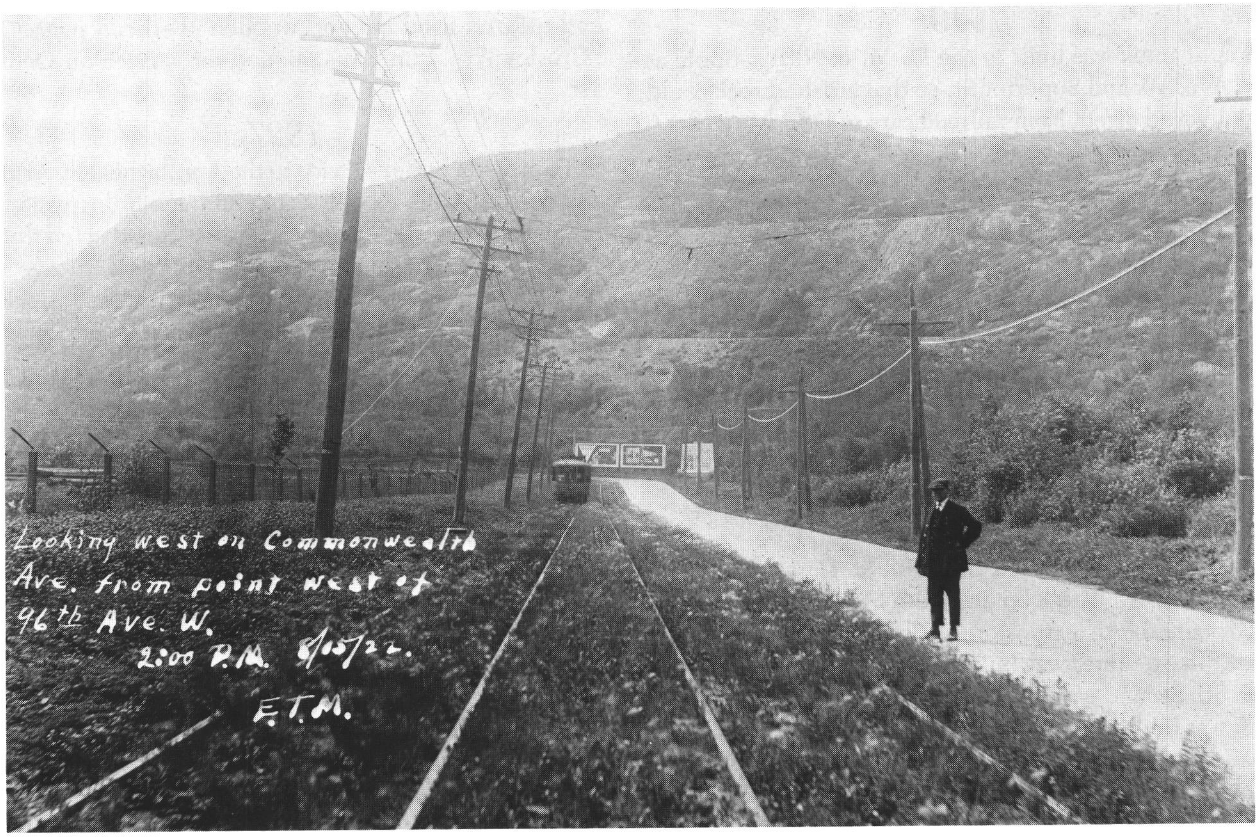
25 (26?) miles 3'6" gage 35-50# T rail

35 cars (25 motor, 10 trailer) american, LaClede, St Louis

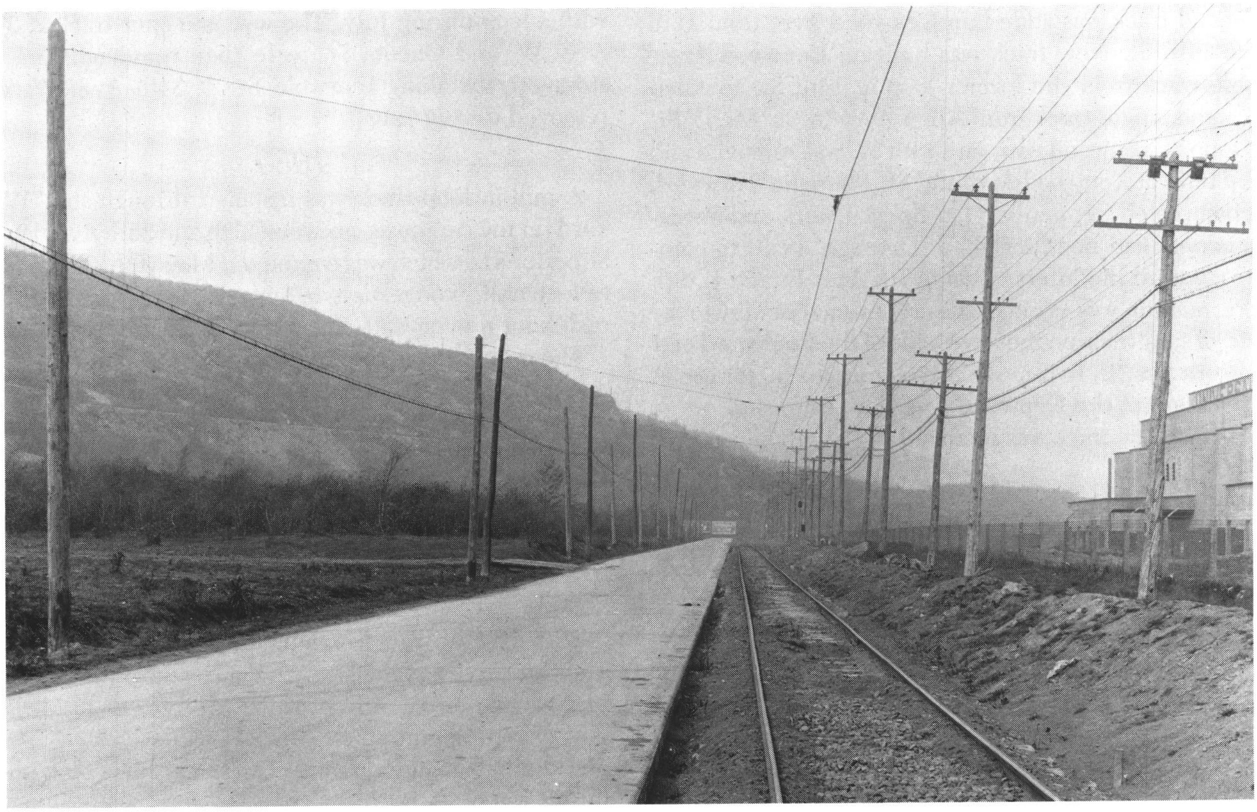
Minnesota Point St Ry 11-1896

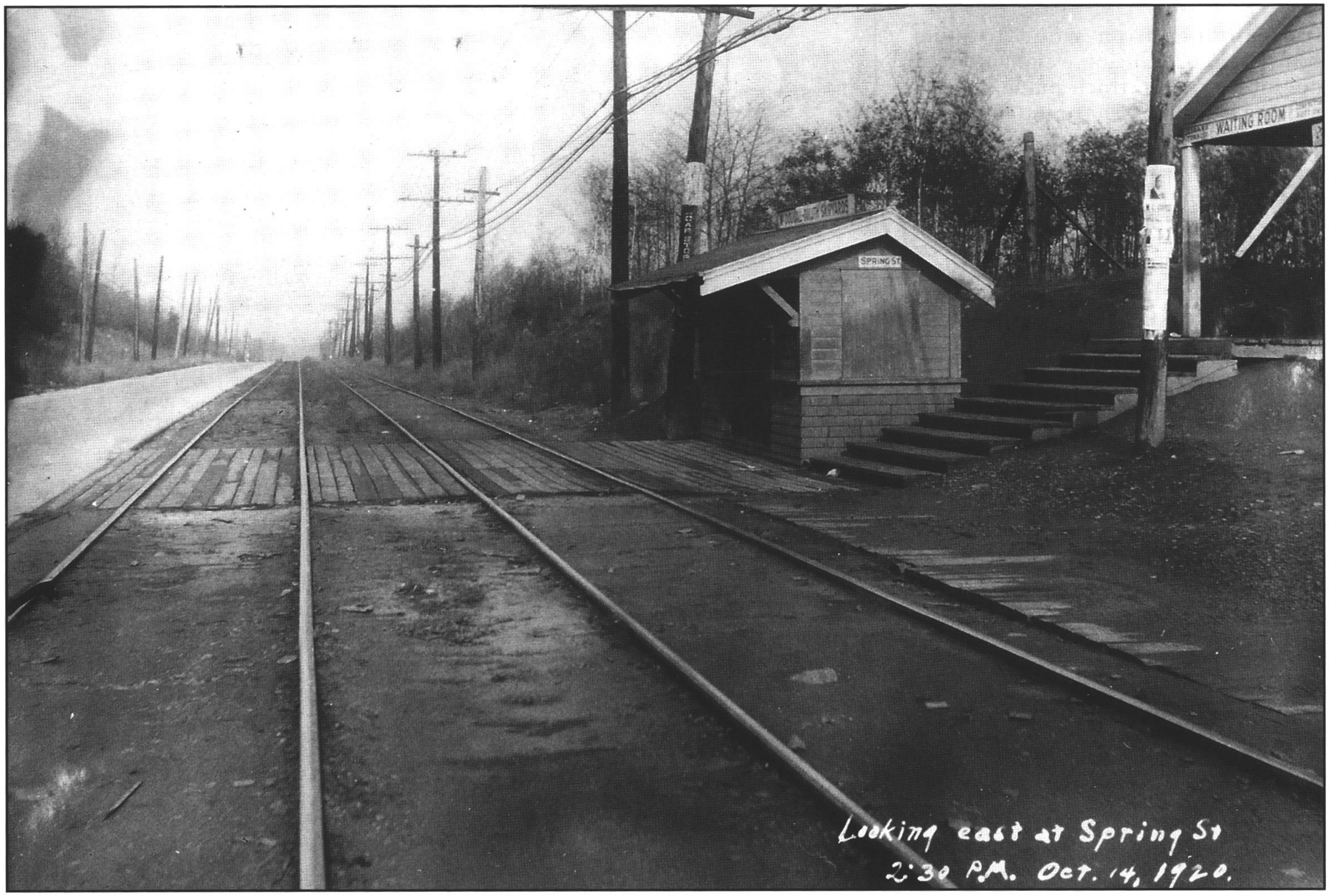
3 1/2 miles 3'6" gage 24# T rail

6 cars, 10 horses


Looking west on Commonwealth
Ave. from point west of
96th Ave. W.
2:00 P.M. 8/15/22.
E.T.M.

Above: Looking west on Commonwealth Ave. from a point west of 96th Ave. W., August 15, 1922.
Below: Looking north on Commonwealth Ave. at the cement plant, October 10, 1918.
(Both photographs DSR; Wayne C. Olsen collection)





Looking east at Spring St
2:30 P.M. Oct. 14, 1920.

Left: The McDougall Shipyard station on Grand Avenue at Spring Street.

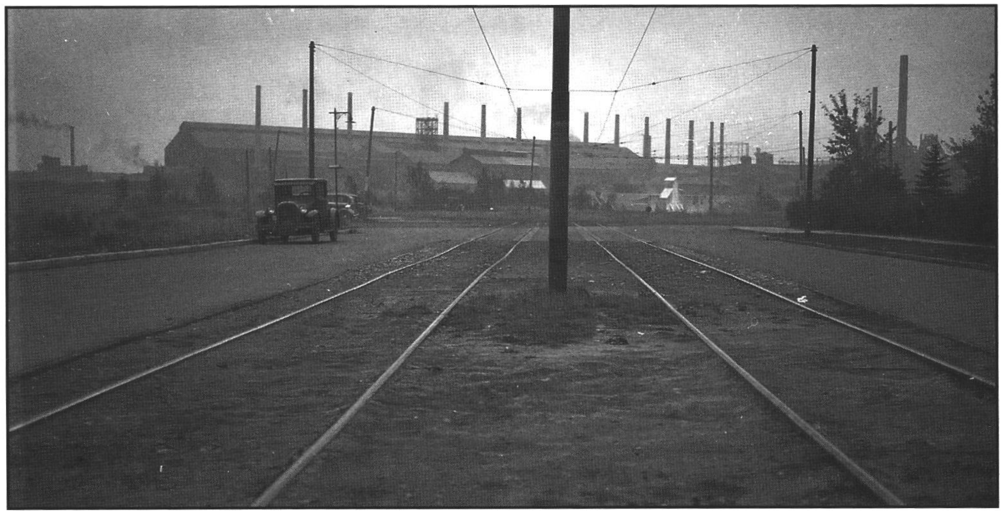
Below left: Approaching the Morgan Park steel plant and loop.

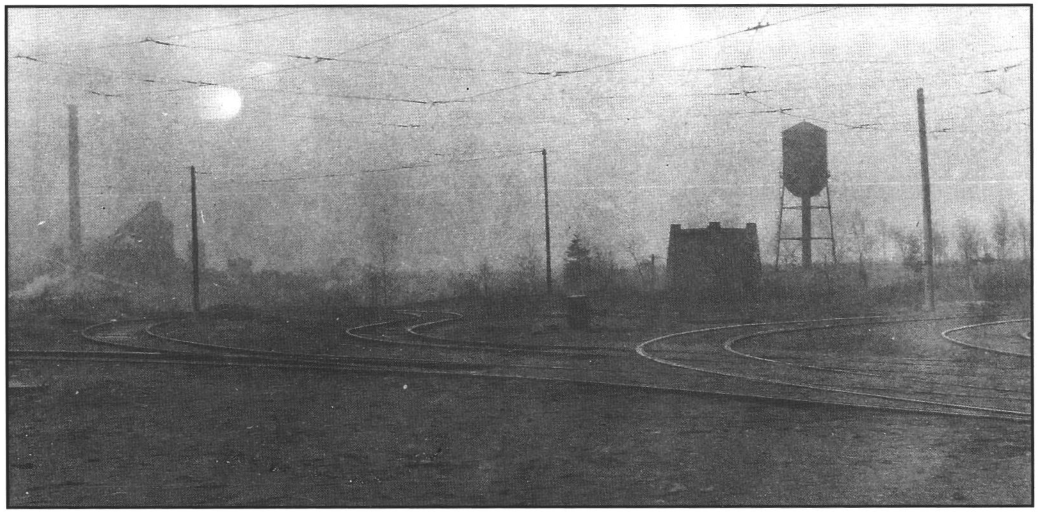
Below right: The Morgan Park loop. The two tracks turning right are headed for Gary-New Duluth. The middle and far left tracks are the loop itself, with a storage spur inside the loop.

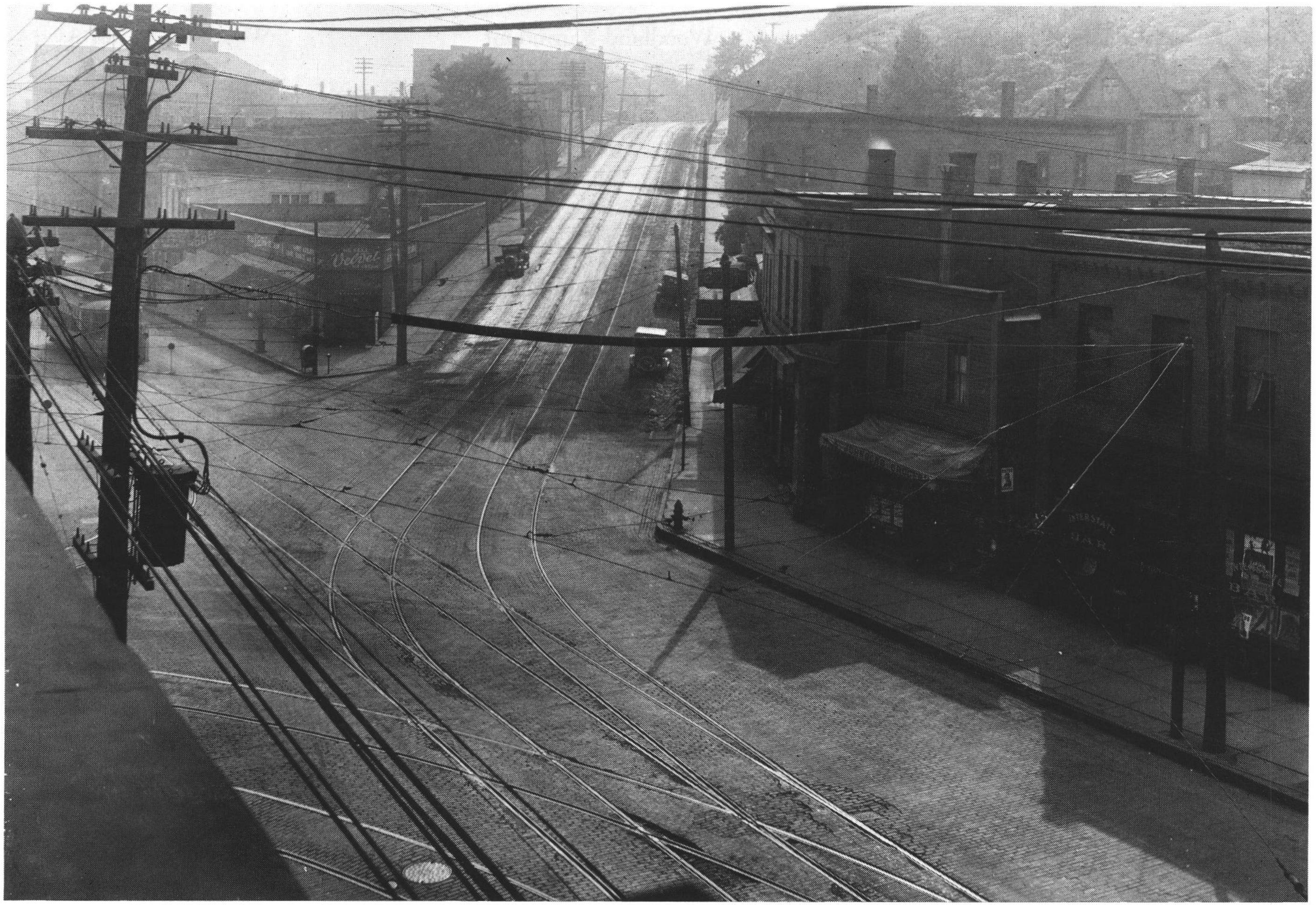
Opposite page: A morning rush hour load check from 1919 shows the extraordinary reverse commute ridership to the shipyard and steel plant.

~~switch before the car is around the loop.~~”

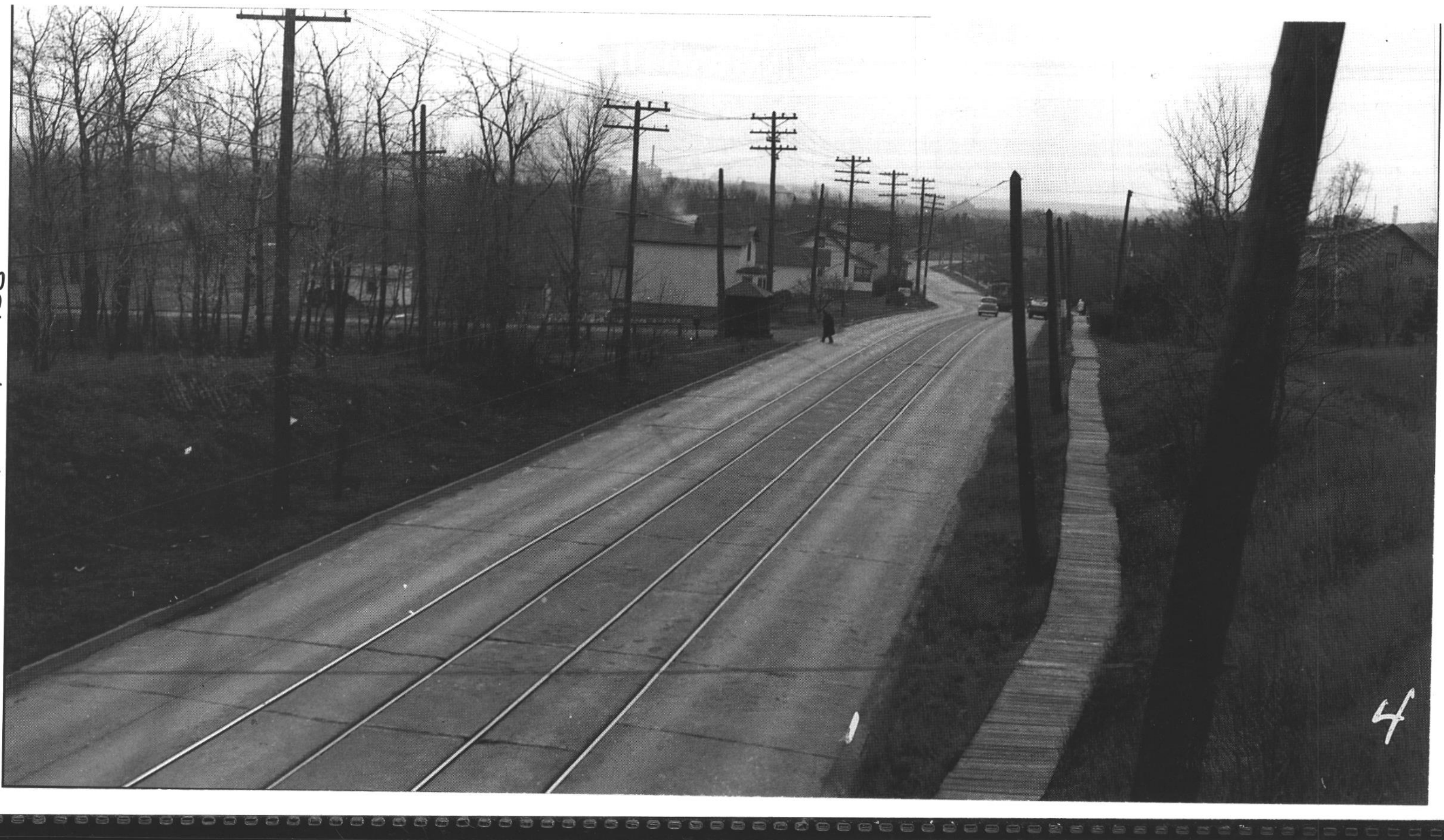
Another bulletin instructed the motormen pull all the way around the loop so it could accommodate three cars without blocking the Gary-New Duluth through cars. To speed boarding and alighting, passengers were allowed to leave and enter through the motorman’s compartment, which was normally off limits to passengers.





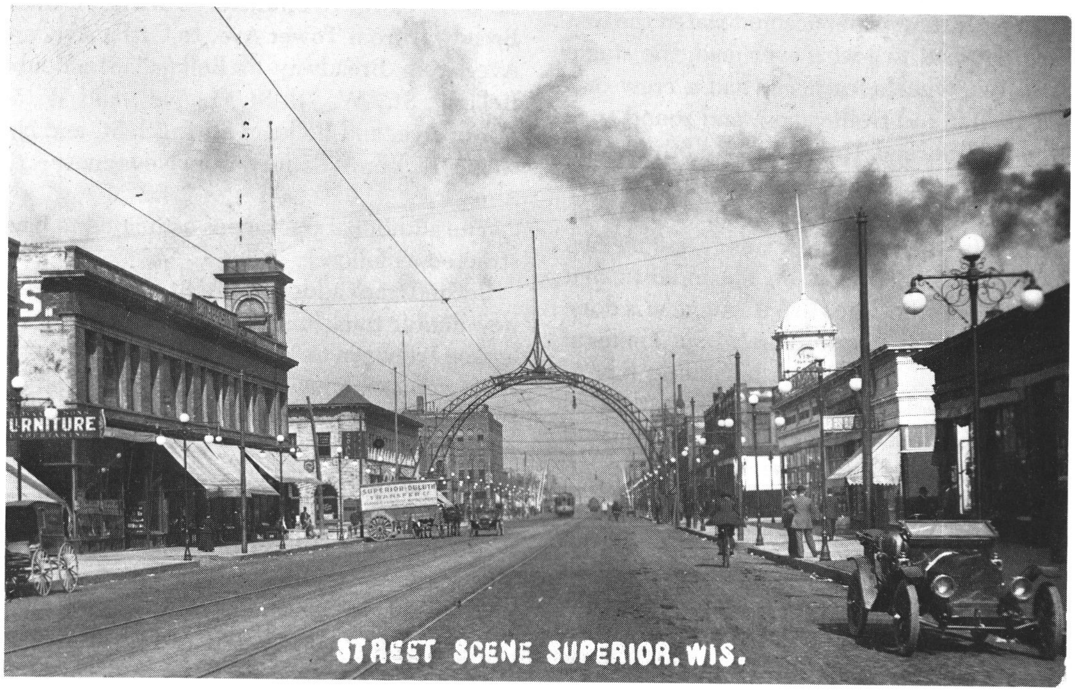


An important and busy intersection in Duluth: the junction of Garfield Ave., left, and Piedmont Ave., right, with Superior St., taken July 13, 1923. Note the unusual special work on the westbound main track of Superior St. where the frog of one switch crosses the mate of the other switch. (DSR; Wayne C. Olsen collection)

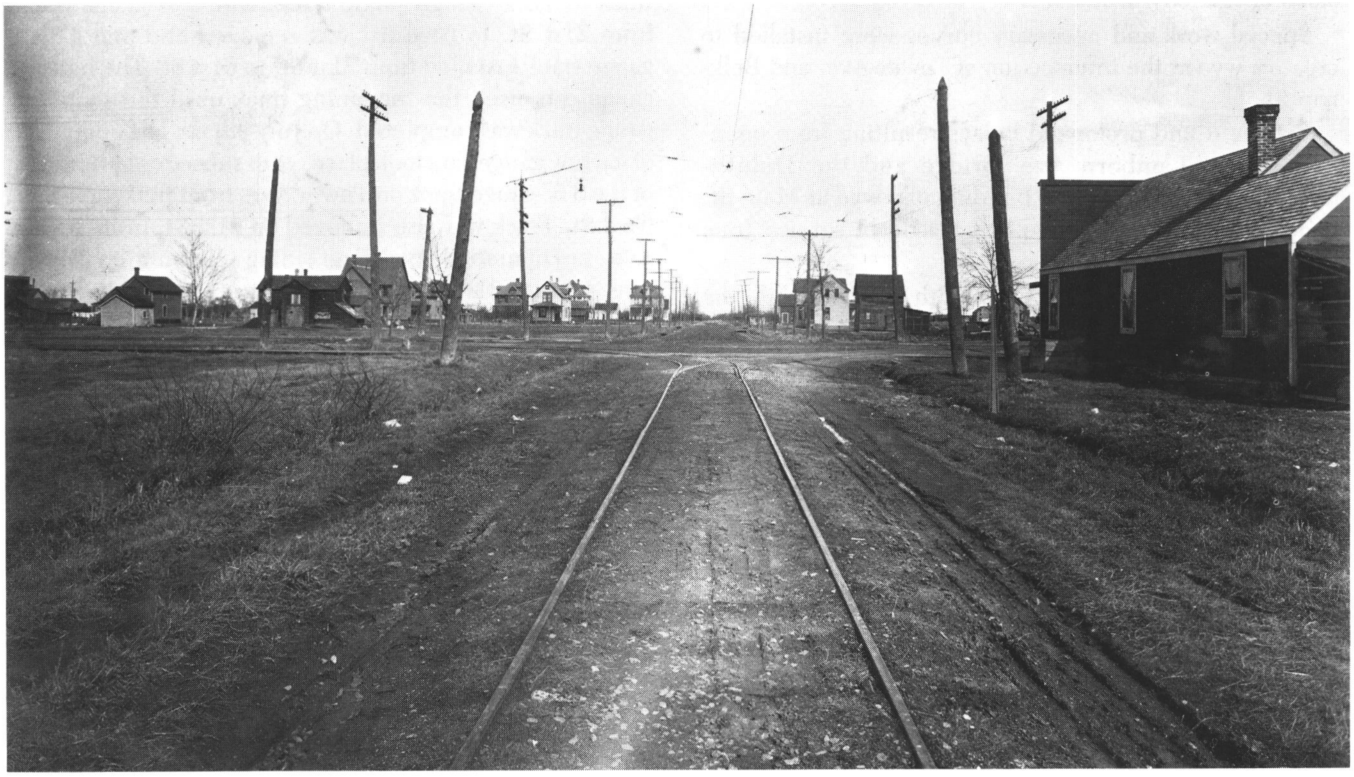


GRAND AVE @ 90TH AVE. W, 1938

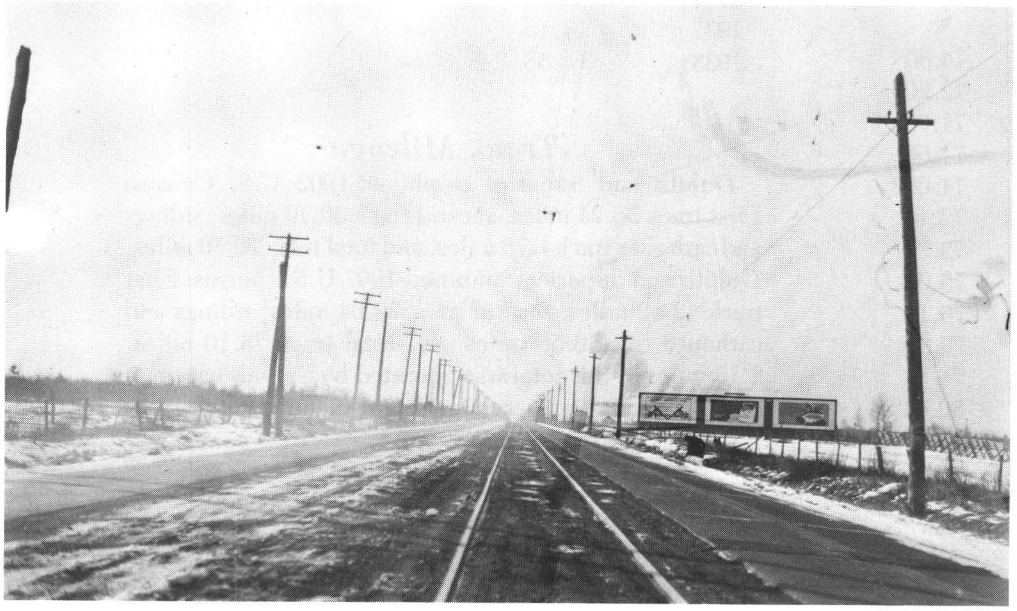
4


STREET SCENE SUPERIOR, WIS.
URNITURE
SUPERIOR-DULUTH TRANSFER

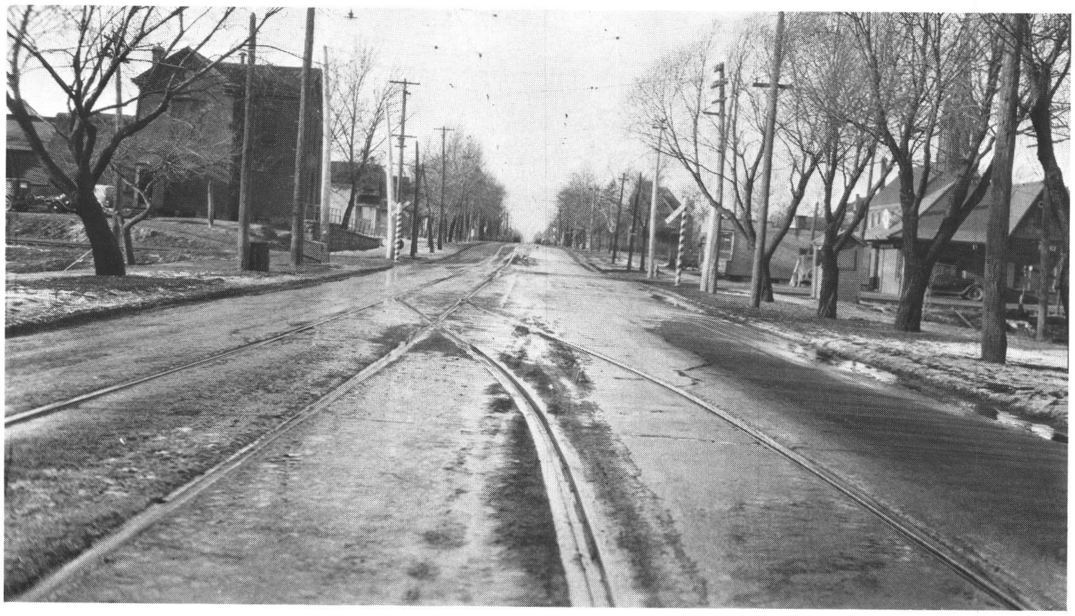
Looking north on Tower Ave. at Broadway, Superior. (Wayne C. Olsen collection)



The South Superior wye at 63rd St. and Tower Ave., looking east, April 25, 1913. (DSR; Wayne C. Olsen collection)

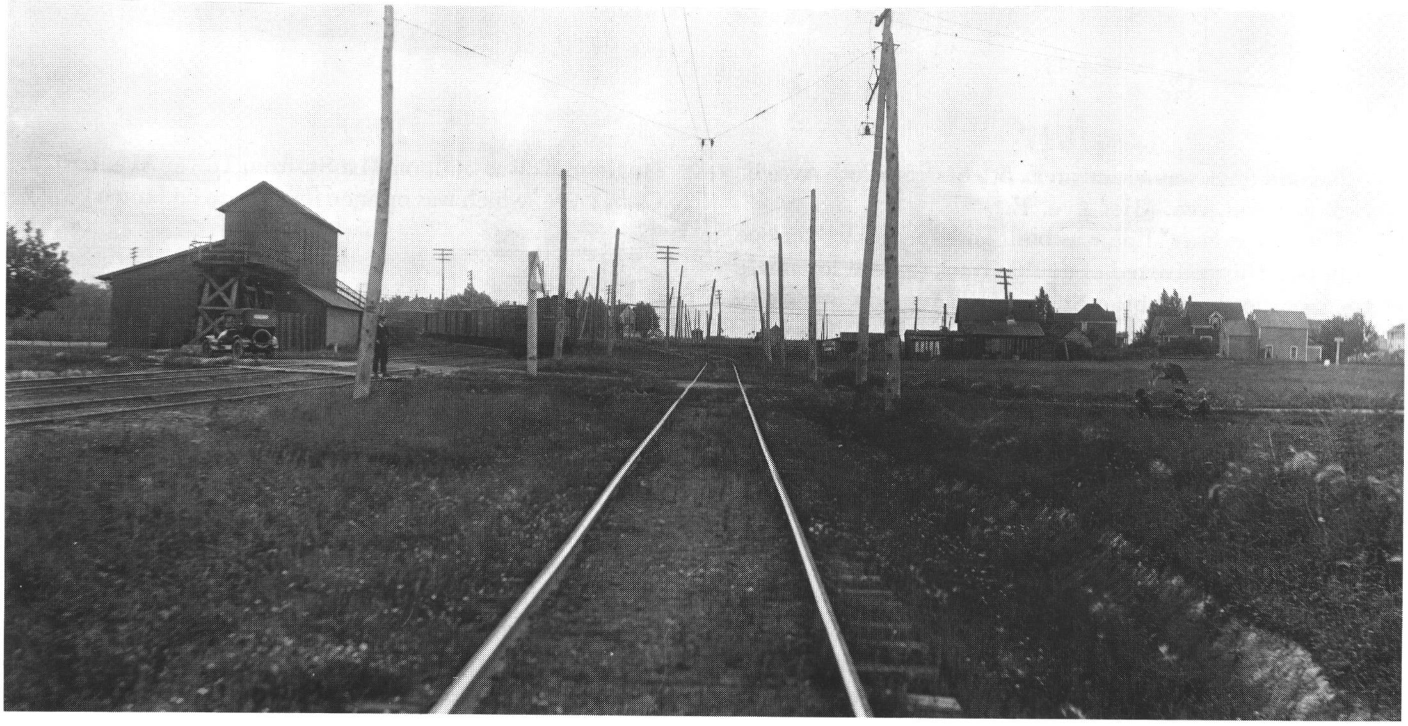


Looking south on Tower Ave. in South Superior

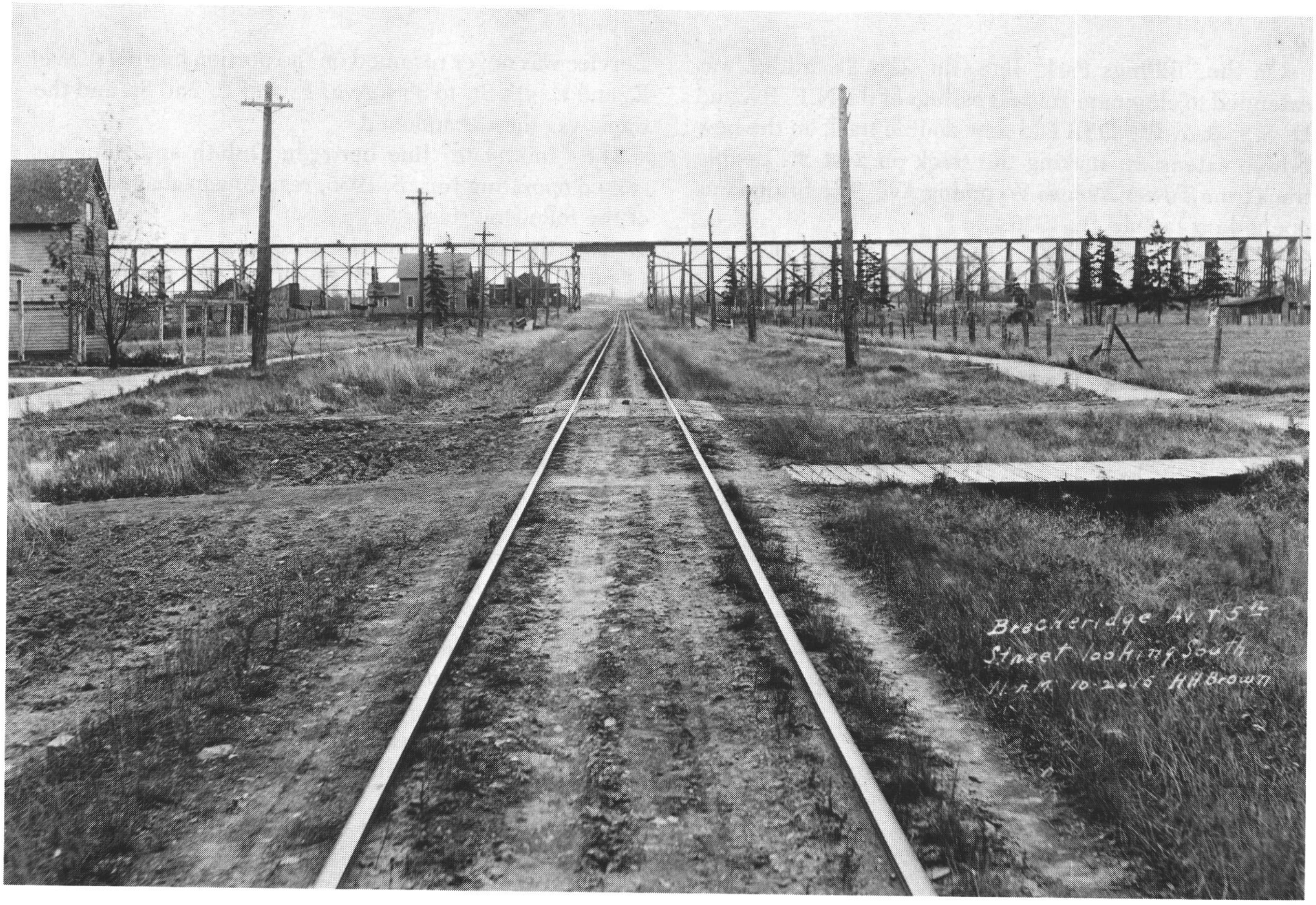


25th Ave. E. and E. 5th St., looking northwest on 5th St. The N.P. Ry. depot is to the right, as is the streetcar loop track at the top of the slight grade. This location is where the first horsecar line in Superior began. Taken January 26, 1931.

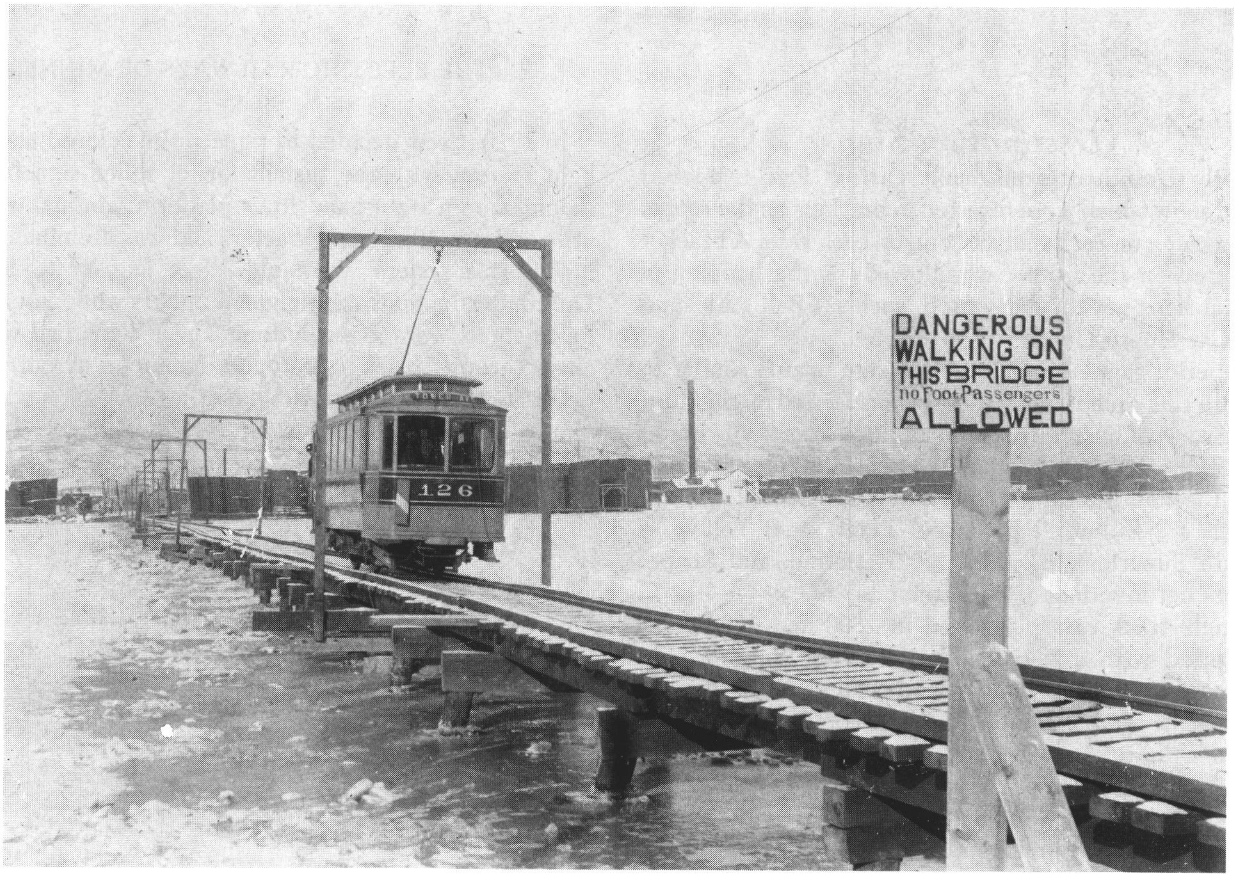
(Both photographs DSR; Wayne C. Olsen collection)



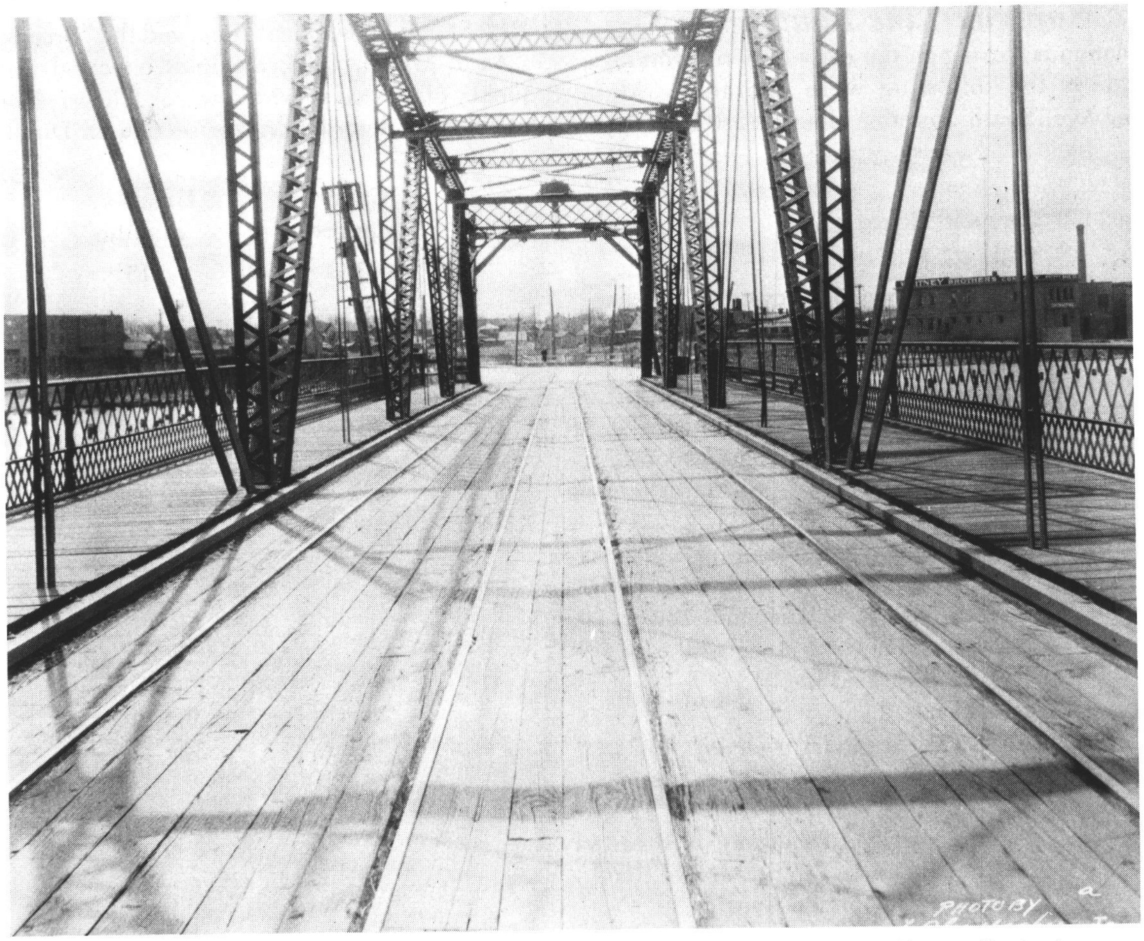
On Hill Ave. at 12th St., looking south across the C. St. P.M. & O. Ry. tracks to Belknap St., August 14, 1922. (DSR; Wayne C. Olsen collection)


Breckeridge Av. & 5th
Street looking South
N.R.M. 10-26-15 HHBrown

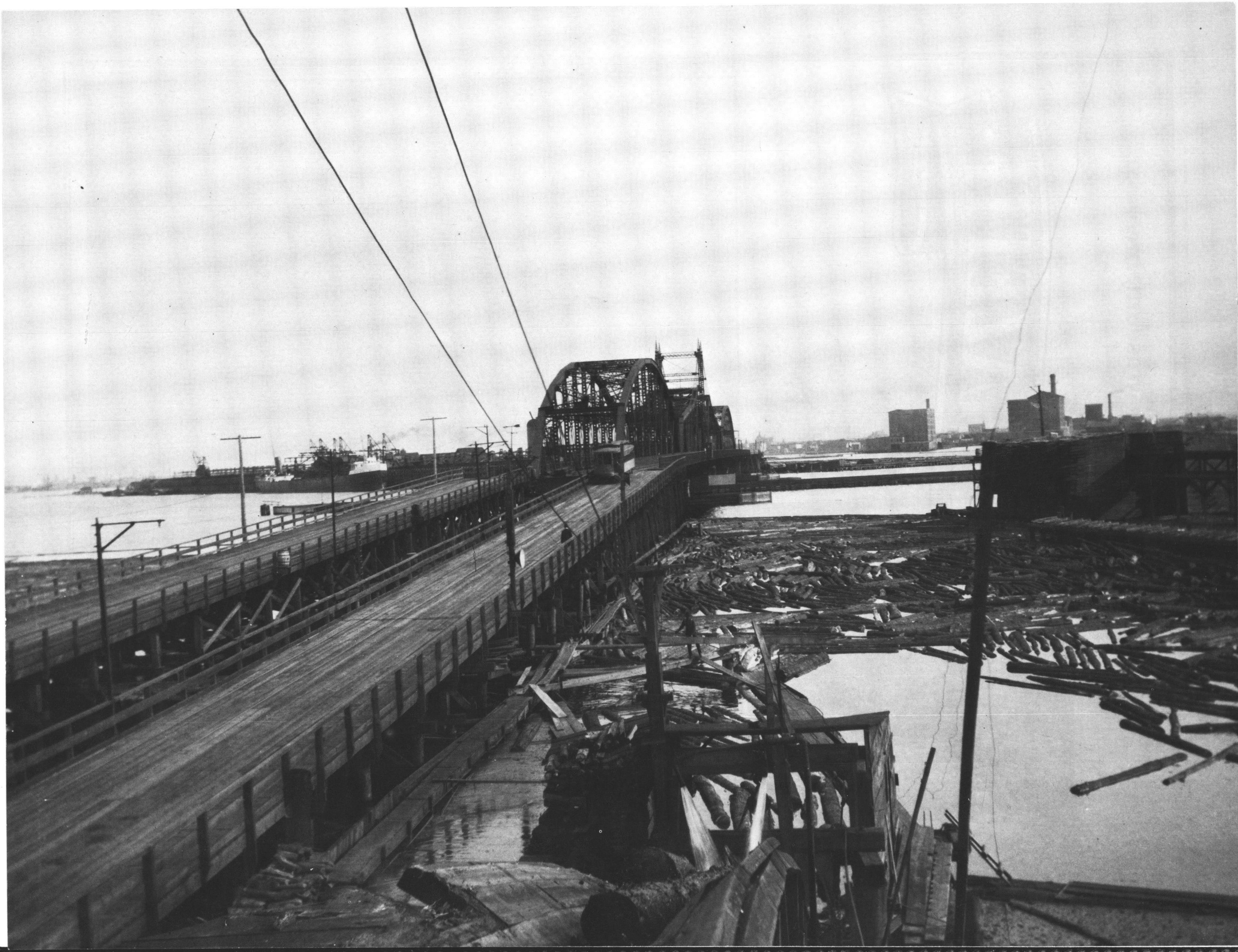
Breckenridge Ave. and E. 5th St., looking southeast on 5th St., October 26, 1915. (DSR; Wayne C. Olsen collection)


DANGEROUS
WALKING ON
THIS BRIDGE
no Foot Passengers
ALLOWED
126

Above: Superior Rapid Transit Ry. car 126 heading toward Duluth on the temporary trestle across St. Louis Bay. (Wayne C. Olsen collection)



The Lamborn Ave. bridge in Superior, April, 1932. (L. P. Gallagher, Jr.; Wayne C. Olsen collection)



POWER GENERATION

POWER GENERATION AND DISTRIBUTION

DULUTH

Powerhouse

The powerhouse for the electrification of the system was built during 1890 at 11th Ave. W. and Michigan St. on the side of a hill. The building was enlarged during 1892. According the 1900 Ford, Bacon & Davis Report the building was of brick and stone construction with steel framing and floor beams, wood floors, and measured 98' x 108' with the boiler room being 41' x 98' and the engine room 63' x 98'. There were four floors at the rear and two floors in front on the street. The lower two floors were used for the engines and generators. The first street floor was used for car storage and the second street floor housed the general offices. The lone brick smokestack was 7' in diameter and 150' high.

Machinery installed during 1890 included one Allis tandem-compound condensing Corliss engine 18" x 32" x 48" of 350 h.p. belted to a countershaft on the second floor to which were belted five Thomson-Houston D62 62 KW generators, and three Babcock & Wilcox 160 h.p. water-tube boilers. A report dated June 1890 in the Street Railway Journal stated that a contract for the one engine had been awarded to E. P. Allis & Company, Milwaukee. Advertisments in the 1890-1892 Street Railway Journals indicated that Duluth St. Ry. had made the following orders:

1. Edward P. Allis Company, Milwaukee: one order for a Reynolds-Corliss compound engine rated at 300 h.p.
2. Babcock & Wilcox Company: three orders for seven boilers totaling 1,072 h.p.

An article in the February 1891 issue of the Street Railway Journal reported the machinery as:

1. One 375 h.p. Reynolds-Corliss compound condensing engine by E. P. Allis Co., Milwaukee.
2. Three pairs of Babcock & Wilcox boilers.
3. Five 80 h.p. Thomson-Houston generators.

Additional machinery was installed during 1891. One Allis non-condensing Corliss engine, 18" x 42" of 150 h.p. belted to two Thomson-Houston D62 62 KW generators; and one Ball 9" x 12" high-speed engine belted to a 50-lite Western arc dynamo.

When the building was enlarged during 1892 the generating capacity was increased substantially during 1892 and 1893. This equipment consisted of the following. One Allis cross-compound condensing Corliss engine 30" x 56" x 60" of 1,000 h.p. belted to the countershaft on the second floor as well as belted directly to four generators. These four generators comprised two Thomson-Houston M.P. 270 270 KW generators (1892) and two Thomson-Houston M.P. 300 300 KW generators (1893). This installation required a flywheel 28' in diameter with a 10'8" face, weighing, with shaft and crank, 96 tons, which was reportedly the largest in the U.S. at that time. Two Babcock & Wilcox 192 h.p. water-tube boilers (1892) and one Babcock & Wilcox 240 h.p. water-tube boiler (1893). The engine, two generators and two boilers were placed in service September 16, 1892. However the two generators and one boiler installed in 1893 were not used until 1896 because of the reduction in passenger traffic caused by the financial depression of 1893.

Coal was dumped into the boiler room from a railroad siding on a trestle adjacent to the building.

As of March 1900 the station capacity was 1,574 KW.

The capacity of the plant was again increased when installation of one 1,000 h.p. steam engine and one 630 KW generator was completed in February 1904.

On June 17, 1907, fire struck the powerhouse. The large steam engine was put out of commission as water fell on the machinery and belt. Service was paralyzed completely for the remainder of the evening and seriously crippled the next day. The two smaller steam engines in the west side of the building were used to resume service.

A contract had been entered into with the Great Northern Power Co. dated April 30, 1905, for the purchase of hydro-electric power in both Duluth and Superior, which provided that the first power was to be received during 1905. The necessity for purchased power suddenly became evident on the occasion of the June 1907 fire at the steam powerhouse. However it was not until September 13, 1907, that the first electricity was received from Great Northern Power Co. The transition to complete purchase of power took two years. The percentage of power produced by the steam plant was 79% during 1907, 7% during 1908, and none during 1908.

The steam plant was maintained as a standby from 1907 through 1914. Equipment from the plant was removed during December 1914. The site and buildings were sold June 13, 1916.

Substations

A summary of the company's power facilities in 1925 provides a description at the time of their greatest extent.

Electrical energy was generated at the Great Northern Power Company's Thompson Dam and transmitted at 66,000 volts, 25 cycle, A.C. to the power company's stations in Duluth and Superior. Power was transmitted from these stations at 13,200 volts, 25 cycle, A.C. to DSR substation where it was stepped-down to 430 volts A.C. At this voltage it went through synchronous converters where it was changed to 600 volts D.C. and fed to the trolley wires.

Duluth stations of the Great Northern Power Co. furnishing 600 volts D.C. were located as follows.
(A) 15th Ave. W. and Superior St.: three motor-generator sets of 1500 KW each.
(B) 13th Ave. E. and E. 5th St., placed in operation October 28, 1922: one automatic rotary converter of 1000 KW.
Automatic substation control was introduced about 1919 and DSR's were the first installed in the northwest.

Duluth sub-stations of DSR receiving A.C. were located as follows.

Substation #1: 34th Ave. E. and E. 4th St., placed in operation March 15, 1913. One-story and basement, brick and concrete construction, with space for two 500 KW rotary converters. It housed one 500 KW automatic rotary converter.

Substation #2: 92nd Ave. W. and Grand Ave., placed in operation May 9, 1916. One-story and basement, brick and concrete construction. One 500 KW automatic rotary converter was installed in 1916. One 1000 KW automatic rotary converter, leased from the U.S. Shipping Board Emergency Fleet Corporation, was installed during October and November 1918. This leased rotary converter was purchased in 1921.

SUPERIOR

Power for the initial electrification in 1890 was supplied by the Superior Water, Light & Power Company. The 1890 U.S. Census reported one power station with two engines (250 h.p. total), and two dynamos. A Babcock & Wilcox advertisement in the Street Railway Journal stated that the Douglas County St. Ry. had placed one order in June 1891 for three boilers totaling 445 h.p.

The Ford, Bacon & Davis 1900 Report stated that the power plant site was located at 2nd St. and Ogden Ave. on 0.75 acres of land. The building was of two-story brick construction measuring 50' x 100'. The first floor contained the boiler room, 35' x 50', and engine room, 50' x 65'. The second floor was unused. The building and site were leased until 1904 when they were purchased.

Old records of the Douglas County St. Ry. list the following power plant machinery purchases.
(a) May-August 1891. One 22" x 42" 300 h.p. non-condensing Corliss engine purchased from the E. P. Allis Company. Three Babcock & Wilcox 150 h.p. water-tube boilers. Three Thomson-Houston D62 bi-polar, 80 h.p., 62 KW generators purchased from the Northwest Thomson-Houston Company.
(b) June-October 1892. One 26" x 42" 400 h.p. non-condensing Corliss engine, purchased from the E. P. Allis Company. One Thomson-Houston 300 KW generator purchased from the Northwest Thomson-Houston Company.

The 1900 Ford, Bacon & Davis report stated that the 300 h.p. engine was belted to a countershaft to which were belted four D62 generators. The 400 h.p. engine was belted with a tightener to one 300 KW generator. The total capacity of the station was 548 KW. Coal for the boilers was wheeled in barrows from an adjoining railroad siding.

On April 30, 1905, DSR entered into a contract with the Great Northern Power Company for the purchase of hydro-electric power. The first power was received under this contract about January 1, 1908.

The steam plant was required to be kept in operating condition for emergency use until the power company was able to furnish all the power required. The steam plant was taken out of operation May 25, 1914. All equipment was removed from the building during December 1914.

Purchased Power

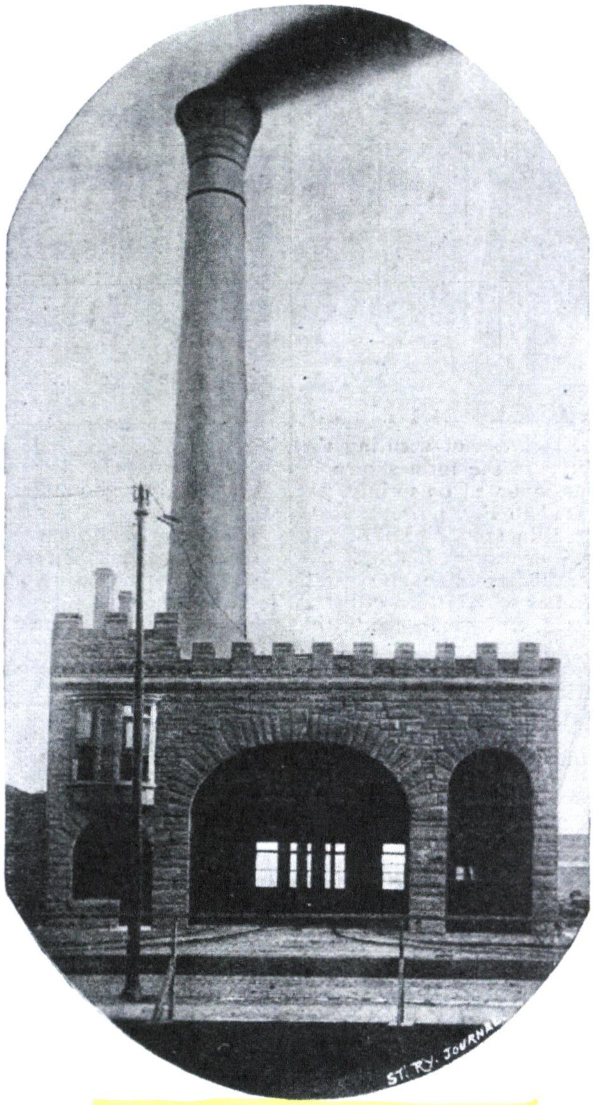
A summary of DSR's power facilities in 1925 lists the Superior equipment as the following.

Superior stations of the Great Northern Power Company furnishing 600 volts D.C.
(A) 2nd St. and Hughitt Ave.: two motor-generator sets of 1500 KW each.
(B) Belknap St. and Poplar Ave., placed in operation October 31, 1922: one 500 KW automatic rotary converter.
Total capacity was 3500 KW.

Electric Railway at Duluth, Minn.

We present two views this month showing the power house and dynamo room of the Duluth Street Railway, Duluth, Minn. This road is about fifteen miles long, the greater part of which is double track. The work of changing from mules to electricity was commenced last Summer, the Thomson-Houston system being adopted. Originally the track was 3 ft. 6 gauge, but it has been changed to standard gauge, 4 ft. 8½. The old rail has been replaced by a girder rail set on chairs which are placed on ties three feet between centres, the ties being set on crushed rock and cement. This makes a very rigid roadbed for the operation of electric cars.

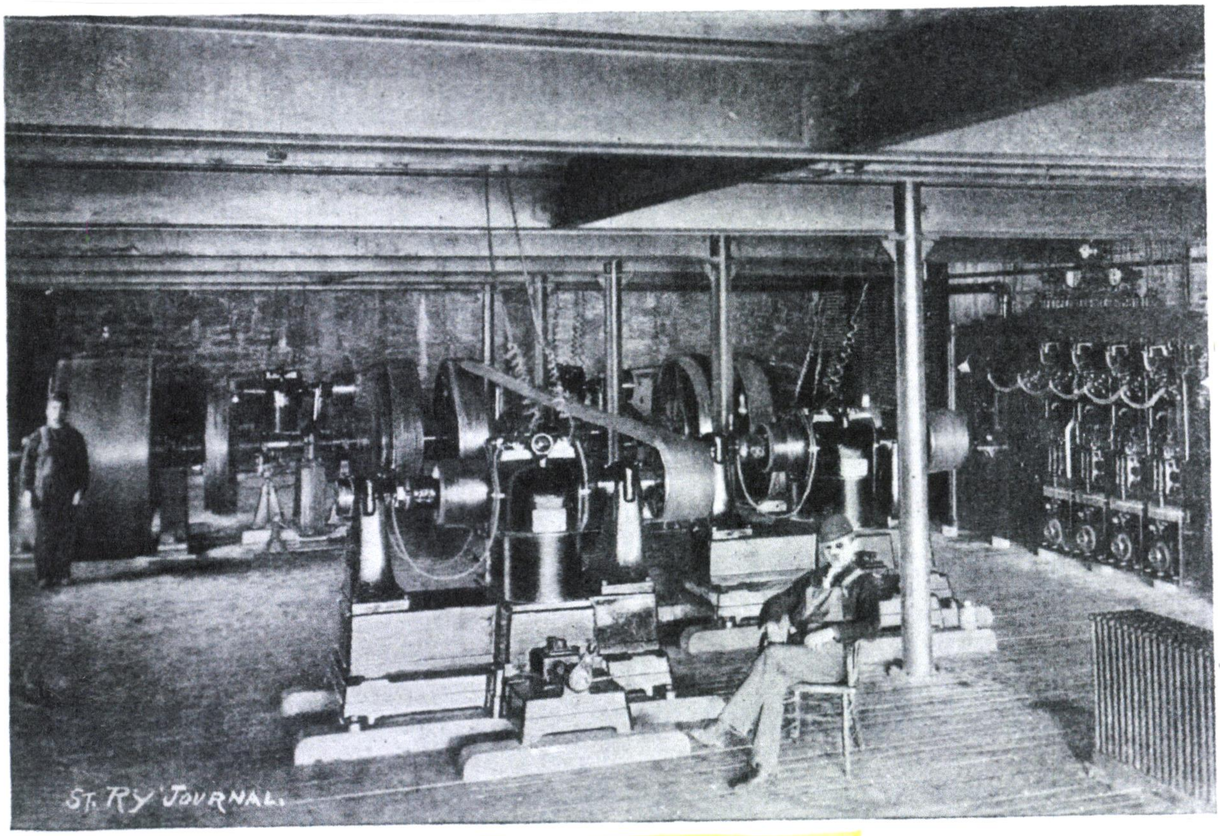
The city of Duluth, as is well known, is situated at the extreme west end of Lake Superior, on a hillside. The main line of the railway on Superior Street runs parallel with the hill, and a branch line on West Third Street runs up the hill on a grade of over eight per cent. for about four blocks. The electrical equipment decided upon for this service consists of twenty-eight 15 H. P. motors and ten 20 H. P. motors of the Thomson-Houston make. Twenty-four of these motors are mounted on twelve Hubbard trucks made by the McGuire Manufacturing Co., of Chicago, and an order has just been placed for the remainder of the motors to be mounted on seven Bemis trucks. The nineteen 16-ft. car bodies are supplied by the Laclede Car Co., of St. Louis, Mo.



POWER HOUSE, DULUTH STREET RAILWAY.

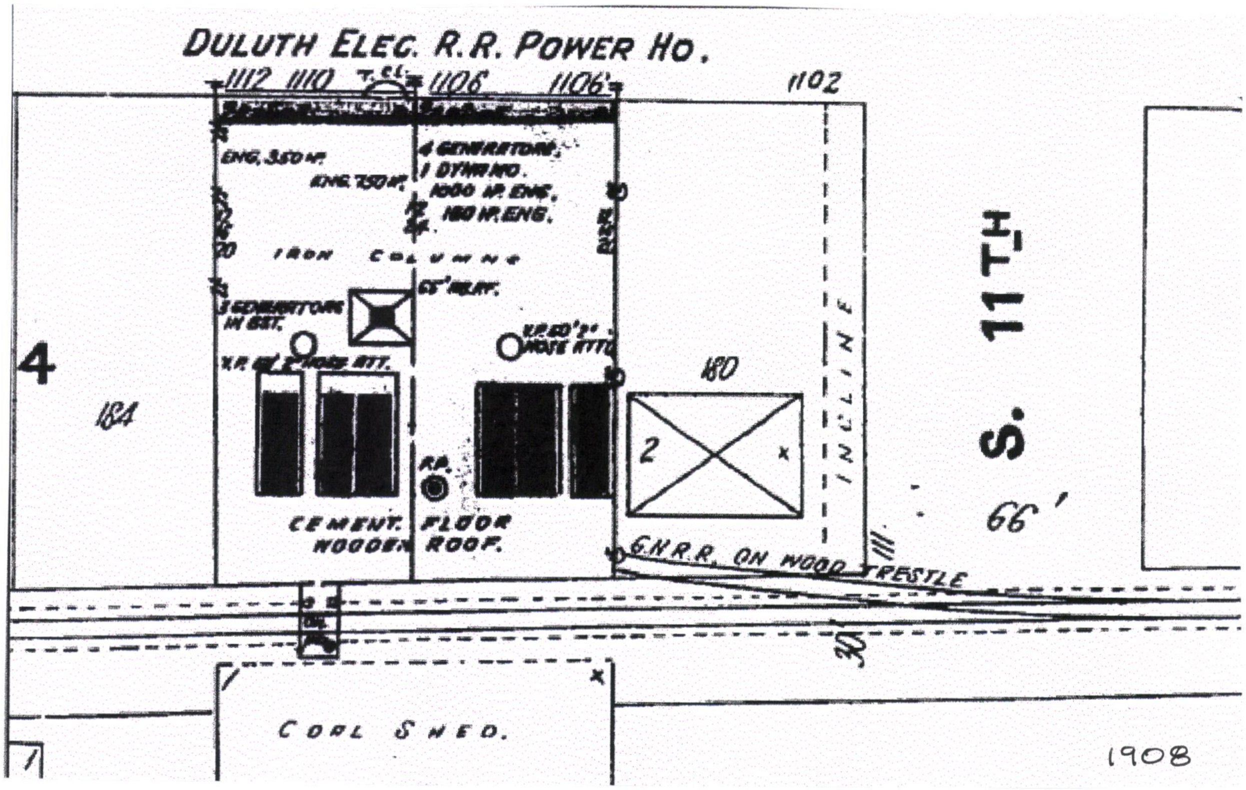
The power station is situated about the centre of the system, and, as will be seen from the illustration, is a very fine building for the purpose. It is erected on the side of a hill and built of brick with brown stone trimmings The engine room is on the second floor, below the street level, so that the windows do not show in the view of the exterior. The dynamo room is on the first floor and is very well illustrated in the interior view.

The steam equipment consists of one 375 H. P. Reynolds-Corliss compound condensing engine, which has been erected by the E. P. Allis Co. of Milwaukee. Three pairs of boilers are used of the Babcock & Wilcox type. In the dynamo room are placed five 80 H. P. Thomson-Houston generators, which are to supply the current for nineteen cars. Ample room is left in the station for doubling the plant, which in a growing city like Duluth, will soon be necessary. On the street floor of the power station, space is left to provide for a large number of cars, which will probably be added in a short time. The offices of the company are also on this floor, and for convenience of arrangement leave nothing to be desired. The car barn is at the east end of the line and is of the same general design as the power house, and in matters of convenience for cleaning, storing and repairing cars is excellent. The cross suspension overhead system is used, and the wires are supported from neat iron poles placed on either side of the street. Throughout the whole system, the results obtained show that the street railway company have adopted the wise course of allowing for a large increase in their business, and also that street railway buildings can be made so attractive as not to decrease the value of adjoining property. Twelve of the cars were put in operation November 21 and have been fully appreciated by the public.

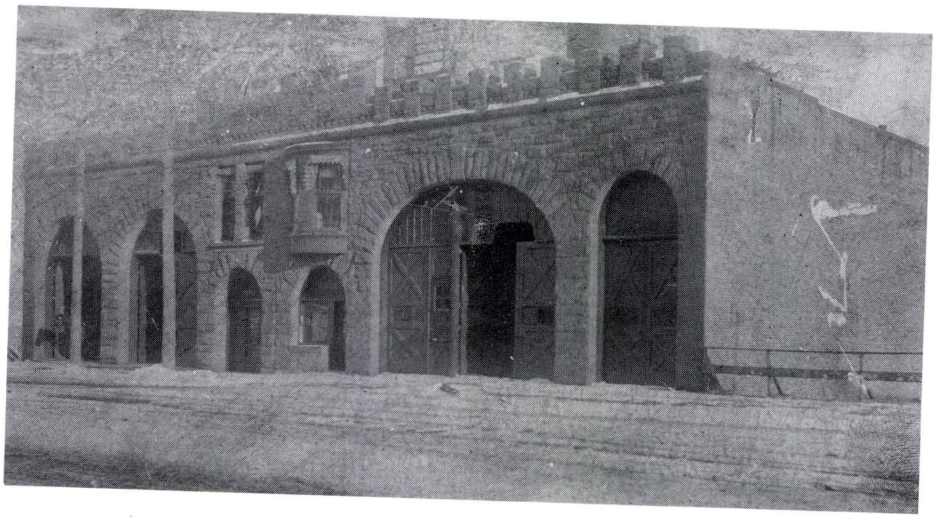

ST. RY JOURNAL.

DYNAMO ROOM, DULUTH STREET RAILWAY.

SRJ FEB 1891


DULUTH ELEC. R.R. POWER HO.
1112
1110
T. CL.
1106
1106
1102
ENG. 350 HP.
ENG. 750 HP.
4 GENERATORS,
1 DYNAMO.
1000 HP. ENG.
180 HP. ENG.
IRON COLUMNS
65' HIGH.
3 GENERATORS IN BST.
4
184
180
2
INCLINE
S. 11TH
66'
CEMENT. FLOOR
WOODEN ROOF.
R.P.
G.N.R.R. ON WOOD TRESTLE
30
COAL SHED.

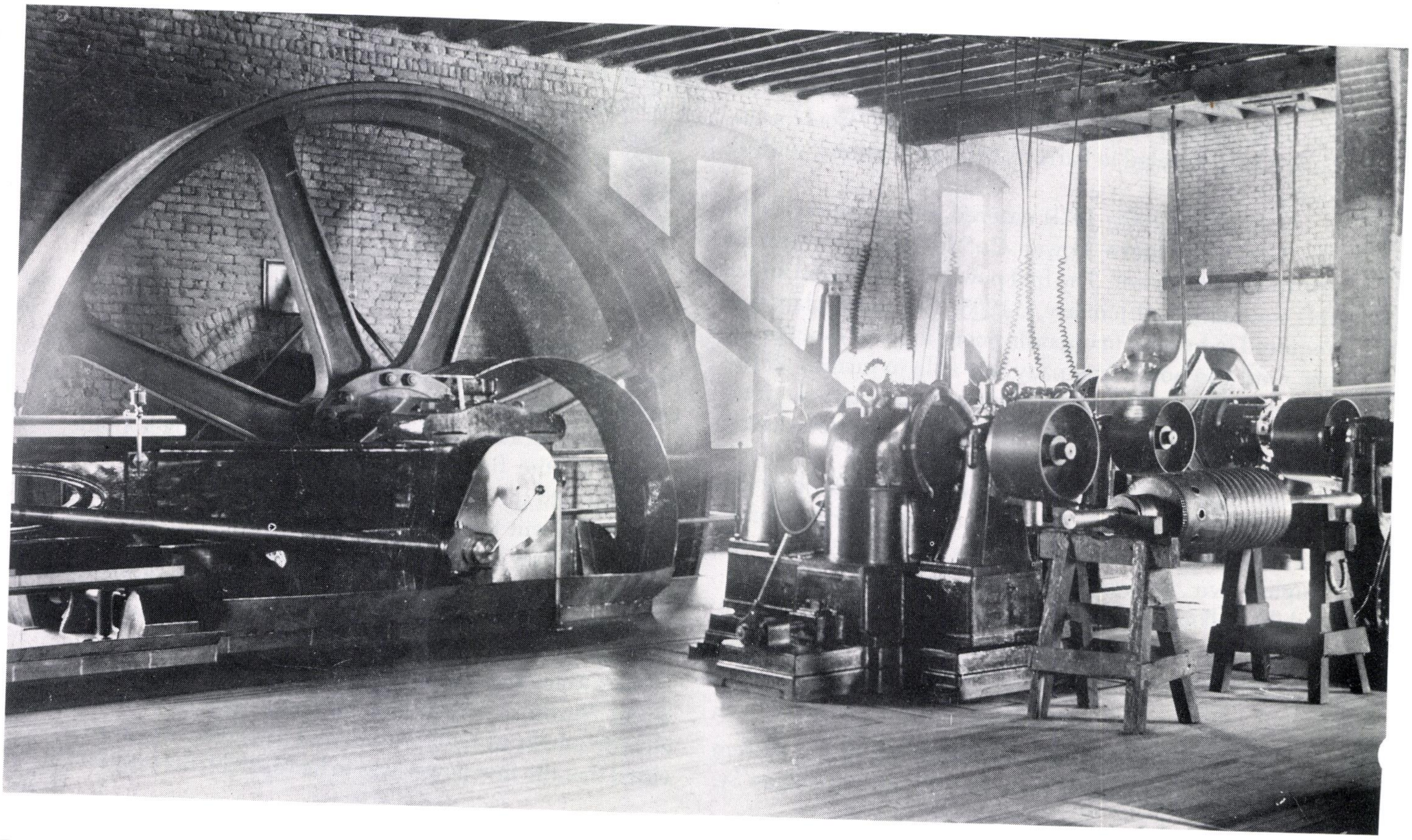
1908



Left: The office and carhouse portion of the powerhouse building at 11th Ave. W. and Michigan St.

Below: The 96 ton flywheel, showing the shaft and crank from the Allis-Corliss engine, in the powerhouse at 11th Ave. W. and Michigan St.

(Both photographs DSR; Wayne C. Olsen collection)



POWER GENERATION

1902 U S Census (12-31-1901): Powerhouses 2

Steam Engines	4 under 500 hp	total 1,200 hp
	1 over 1000 hp	total 1,200 hp
	5	2,400 hp
Auxiliary Steam Engine	1	50 hp
Boilers	9	total 1,500 hp
D.C. Dynamos	16 under 500 hp	total 1,260 hp
	3 500/1000 hp	total 1,590 hp
	19	2,850 hp

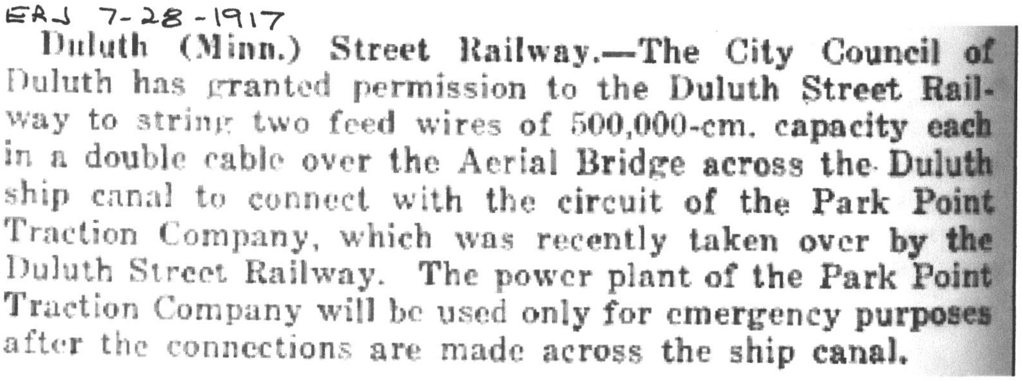
1907 U S Census (12-31-1907): Powerhouses 2

Steam Engines	3 under 500 hp	total 1,050 hp
	1	900 hp
	1	1,200 hp
	5	3,150 hp
Auxiliary Steam Engine	1	50 hp
Boilers	Not Listed	
D.C. Dynamos	11 under 500 kw	total 2,038 kw
	1	630 kw
	12	2,668 kw

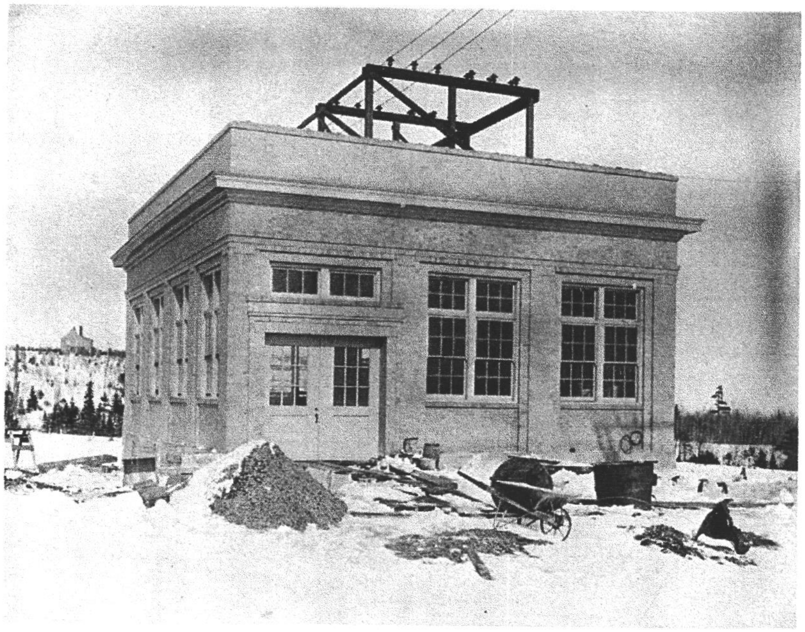
Generated Power for Sale.

Electric Railway Journal 1-4-1919
General Electric Company list of automatic substations installed by or on order from them. Included Duluth Street Railway.
1 Substation one 500 kw rotary converter
1 Substation one 1,000 kw rotary converter
13,200 volts, 25 cycle A.C., 600 volts D.C.

ERJ 7-28-1917



Duluth (Minn.) Street Railway.—The City Council of Duluth has granted permission to the Duluth Street Railway to string two feed wires of 500,000-cm. capacity each in a double cable over the Aerial Bridge across the Duluth ship canal to connect with the circuit of the Park Point Traction Company, which was recently taken over by the Duluth Street Railway. The power plant of the Park Point Traction Company will be used only for emergency purposes after the connections are made across the ship canal.



Substation #1 at 34th Ave. E. and E. 4th St., Duluth, nearing completion in March, 1913.

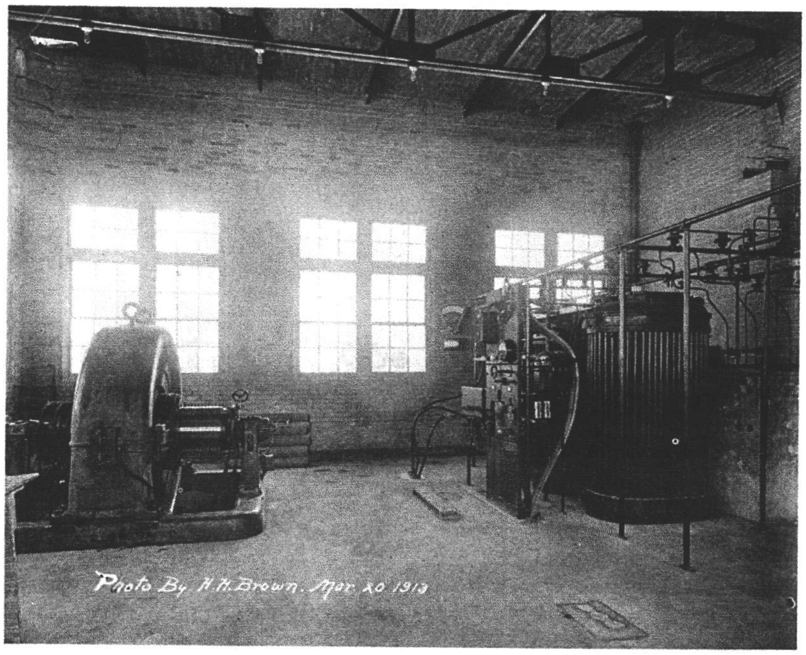


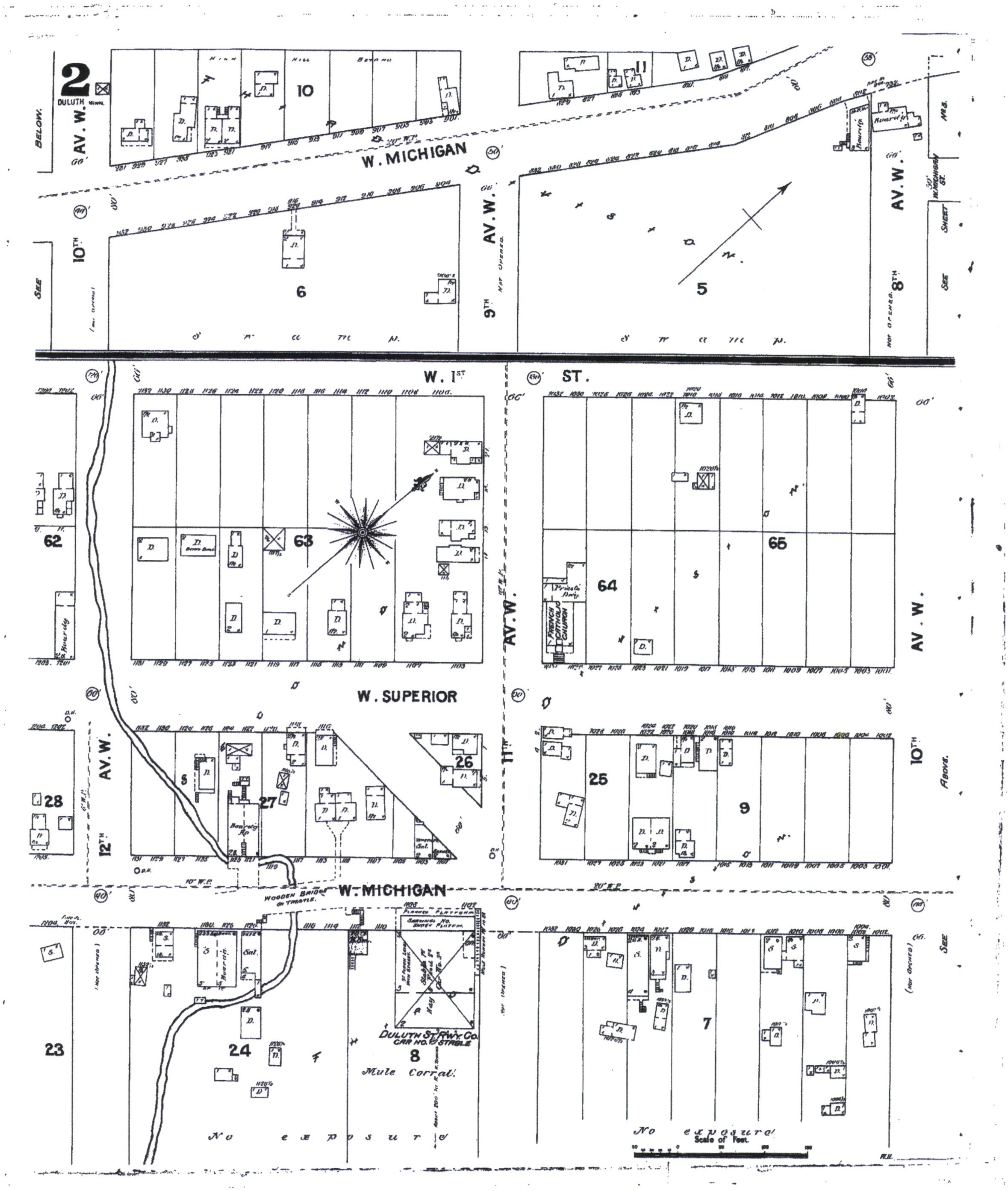
Photo By H.H. Brown. Mar. 20 1913

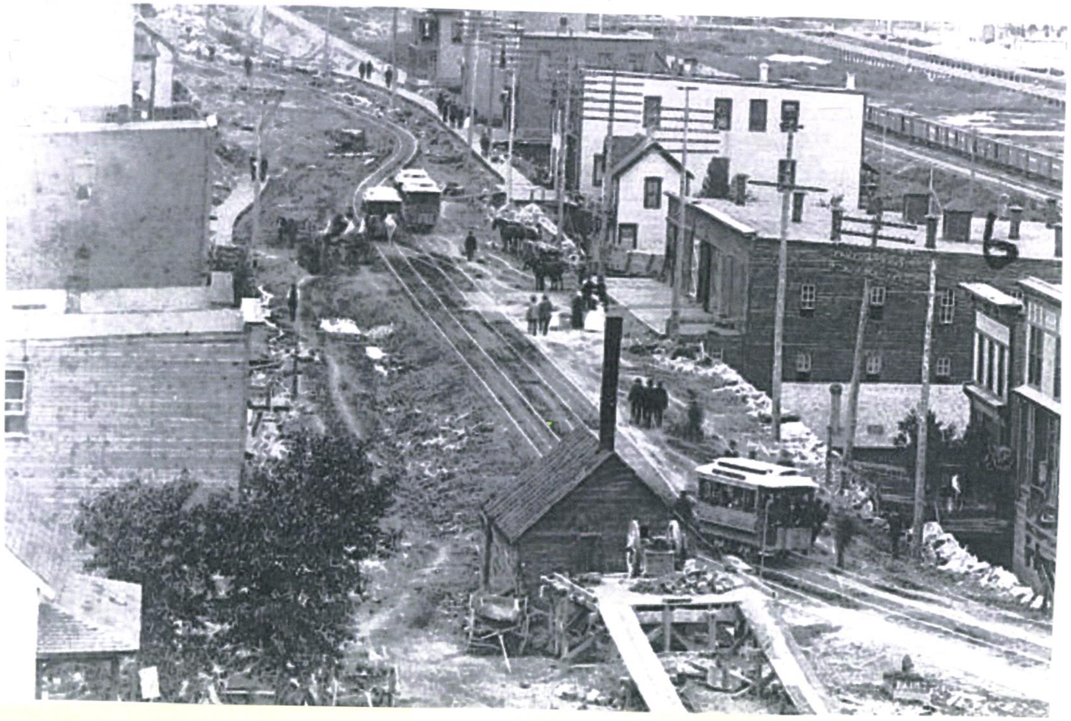
Interior of Substation #1, showing the rotary converter, step-down transformers, and switchboard.

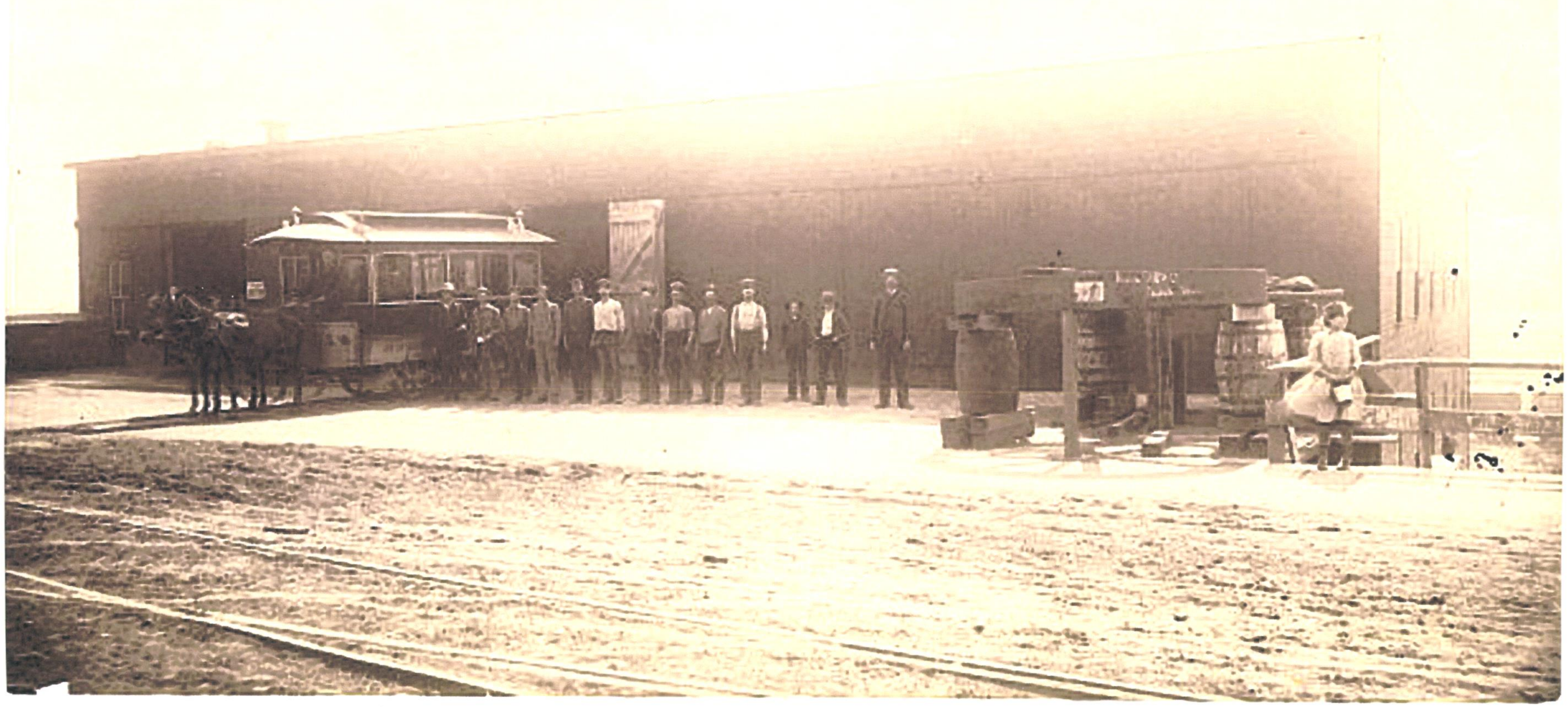
(Both photographs DSR; Wayne C. Olsen collection)

CARHOUSES &
SHOPS

DULUTH 1888


2
DULUTH MINN.
BELOW.
AV. W.
HIGH HILL BEYOND
10
11
W. MICHIGAN
10TH
9TH
AV. W.
NOT OPENED
8TH
AV. W.
SEE SHEET NO. 3
W. MICHIGAN ST.
6
5
SWAMP
SWAMP
SEE
W. 1ST ST.
62
63
64
65
Private Dwg.
FRENCH CATHOLIC CHURCH
Boardg.
AV. W.
AV. W.
W. SUPERIOR
12TH
AV. W.
11TH
10TH
ABOVE.
28
27
26
25
9
Boardg Ho.
WOODEN BRIDGE ON TRESTLE
W. MICHIGAN
23
24
8
7
DULUTH ST. RWY. CO. CAR HO. & STABLE
Mule Corral
No exposure
No exposure
Scale of Feet
SEE




11th AVE. W. AND MICHIGAN ST.

CARHOUSES AND SHOPS

DULUTH

Endion Carhouse

This carhouse was built at 20th Ave. E. and Superior St. Of brick construction it measured 100' x 150' with a capacity of twenty-two 20 ft. cars. The first test run of an electric car was made from here on November 2nd, 1890. It was used as an operating carhouse for only a short time as it was learned that operations could be handled more satisfactorily from one location. The building was subsequently used for storage of supplies and materials.

It was leased to the Duluth Polo Club October 15, 1894, for use as a rink during the winter months.

Apparently DSR continued to use the facility for it was reported that during 1900-1901 old Superior single-truck passenger cars were moved here for storage.

On October 17, 1901, the property and building were sold to the Duluth Episcopal Diocese.

11th Ave. W. and Michigan St.

During 1890 a two-story building was constructed as part of the steam powerhouse building replacing the one-story horsecar barn and stables built in 1885. This was used as an operating carhouse until 1893 when the newly constructed buildings at 26th Ave. W. and Superior St. were completed. The general offices of the company were moved to this location in November 1897. Effective February 22, 1908, the offices were again moved, this time to a newly constructed office building at 27th Ave. W. and Superior St.

The property, carhouse-powerhouse building was sold June 13 (July 15?), 1916, to the Bridgeman-Russell Company. All tracks were removed and the buildings demolished, the final work completed February 24, 1917.

26th Ave. W. and Superior St.

During 1891 construction began on a building of brick and stone construction measuring 150' x 225'. When completed in 1893 the carhouse contained 13 tracks with repair pits throughout. Machine, blacksmith, woodworking and paint shops, and armature winding room were on the second floor over the rear portion, while the line foreman's office and conductor's-motormen's room were on the second floor over the front portion. The center portion was open to the roof.

An additional 150 front-feet of land was purchased in July 1902 on 1st St. west of the carhouse building and additional shop buildings constructed. The forge, machine, and motor shops were completed in February 1903.

In June 1904 it was announced that a 100' x 100' addition would be constructed on Superior St. west of the carhouse building. Essentially a one-story building with a central second-story for the master mechanic's office and drafting rooms, it contained four tracks and the carpenter, paint, and general repair shops.

A contract was awarded in April 1907 for construction of an office building at 27th Ave. W. and Superior St. This building was completed in February 1908. At the same time nine storage tracks were built between the shop and new office buildings.

During June 1909 a 90 ft. high water tower for fire protection purposes was under construction.

Property was purchased on Superior St. between 27th Ave. W. and 28th Ave. W. for material and car storage. Called the "West Yard", track laying was completed during June 1909.

In June 1917 it was announced that two additional car storage tracks were to be built at 27th Ave. W. and Superior St. during the summer, for use by the wrecker, tower car, and other service equipment.

Minor modifications were made in subsequent years to the track layout and building interior arrangements. As of January 1, 1925, the track mileage comprised the following.

Tracks 1-13 in the carhouse	.790 miles
Tracks 14-17 in the shops	.114 miles
Tracks 18-26	.762 miles
Soo Line Ry. connection	.109 miles
27th to 28th Ave. W. including the three-part wye at 27th Ave.	.734 miles
Total track	2.509 miles

During May 1930 a change was made in the trackage at 28th Ave. W. and Superior St. to allow incoming cars to be moved clear of traffic on Superior St.

When the conversion to trolley buses and buses took place the buildings were converted to a bus garage and shops.

"Highland Ave." Line Carhouse

A one-story stone and frame building was located at 7th Ave. W. and 8th St. at the top of the Incline Railway. It was used to store, service, and perform minor repairs of cars operating the "Highland Ave." line. The building housed one track with a capacity of one car. During 1922 the building was lengthened slightly. As of January 1, 1926, this carhouse contained .01373 miles (72.5 l.f.) of track.

Park Point Carhouses

The two carhouses of the Park Point Traction Co. were acquired with the company in 1917. Information as of January 1,1926, is as follows.

Regular carhouse: one-story, brick and concrete, 46' x 150'; 973.2 l.f. of track including four switches = .1843 miles of track.

Fire Car carhouse: 351.3 l.f. of track including two switches = .0665 miles of track.

Total carhouse track was 1324.5 l.f. = .2508 miles of track.

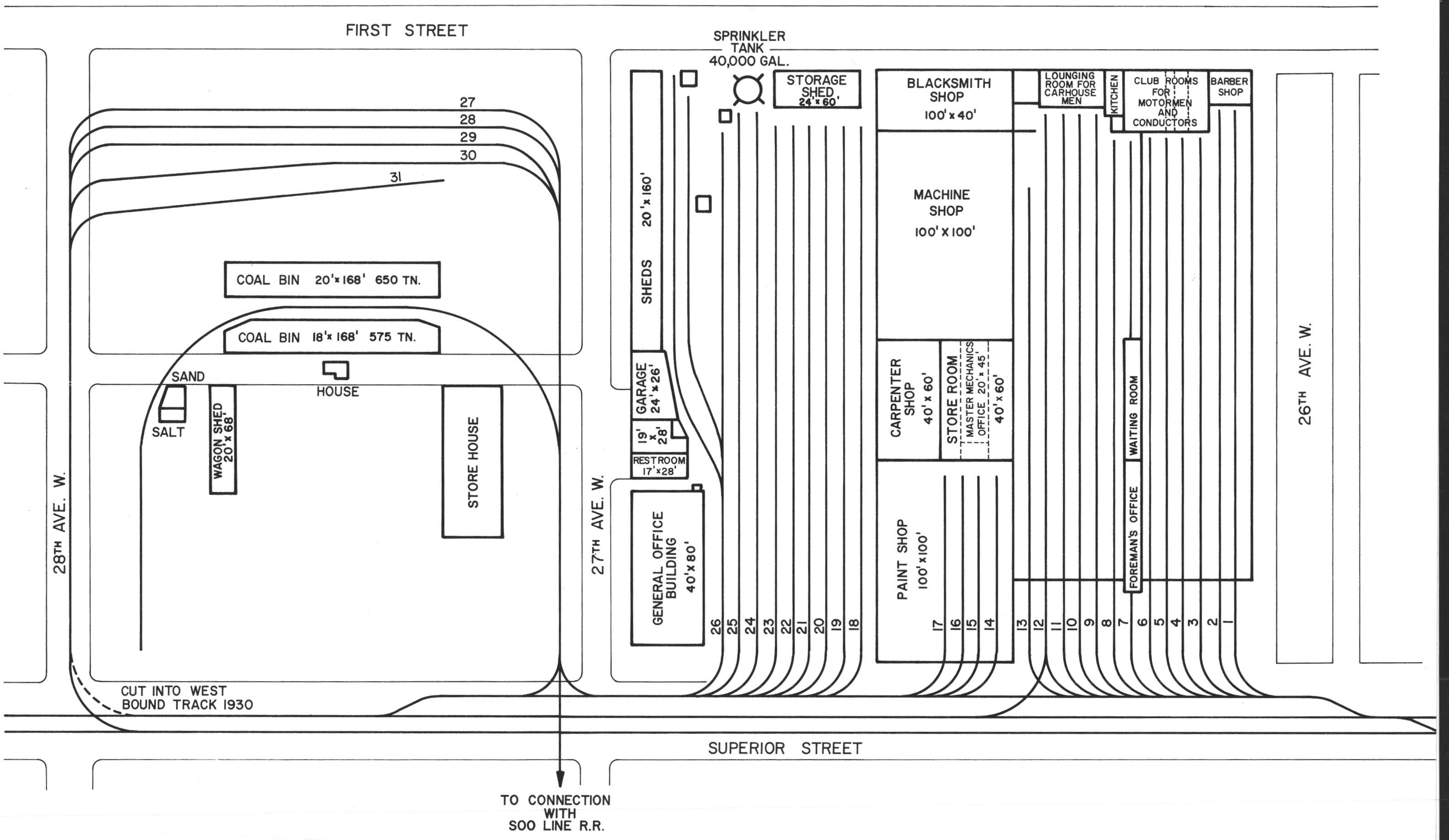
The regular carhouse was taken out of service in 1930 upon completion of the Aerial Bridge. The cars were then assigned to the Duluth carhouse. The building was subsequently sold.

The Fire Car carhouse was given to the City of Duluth for a fire station in 1930.

PV119ED
AVERY™

DULUTH STREET RAILWAY

DULUTH MINNESOTA
CARHOUSE AND SHOPS
1925


FIRST STREET
SPRINKLER TANK 40,000 GAL.
STORAGE SHED 24'x60'
BLACKSMITH SHOP 100'x40'
LOUNGING ROOM FOR CARHOUSE MEN
KITCHEN
CLUB ROOMS FOR MOTORMEN AND CONDUCTORS
BARBER SHOP
27
28
29
30
31
SHEDS 20'x160'
MACHINE SHOP 100'x100'
COAL BIN 20'x168' 650 TN.
COAL BIN 18'x168' 575 TN.
SAND
HOUSE
SALT
WAGON SHED 20'x68'
STORE HOUSE
GARAGE 24'x26'
19' x 28'
RESTROOM 17'x28'
GENERAL OFFICE BUILDING 40'x80'
CARPENTER SHOP 40'x60'
STORE ROOM
MASTER MECHANICS OFFICE 20'x45'
40'x60'
WAITING ROOM
FOREMAN'S OFFICE
PAINT SHOP 100'x100'
28TH AVE. W.
27TH AVE. W.
26TH AVE. W.
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
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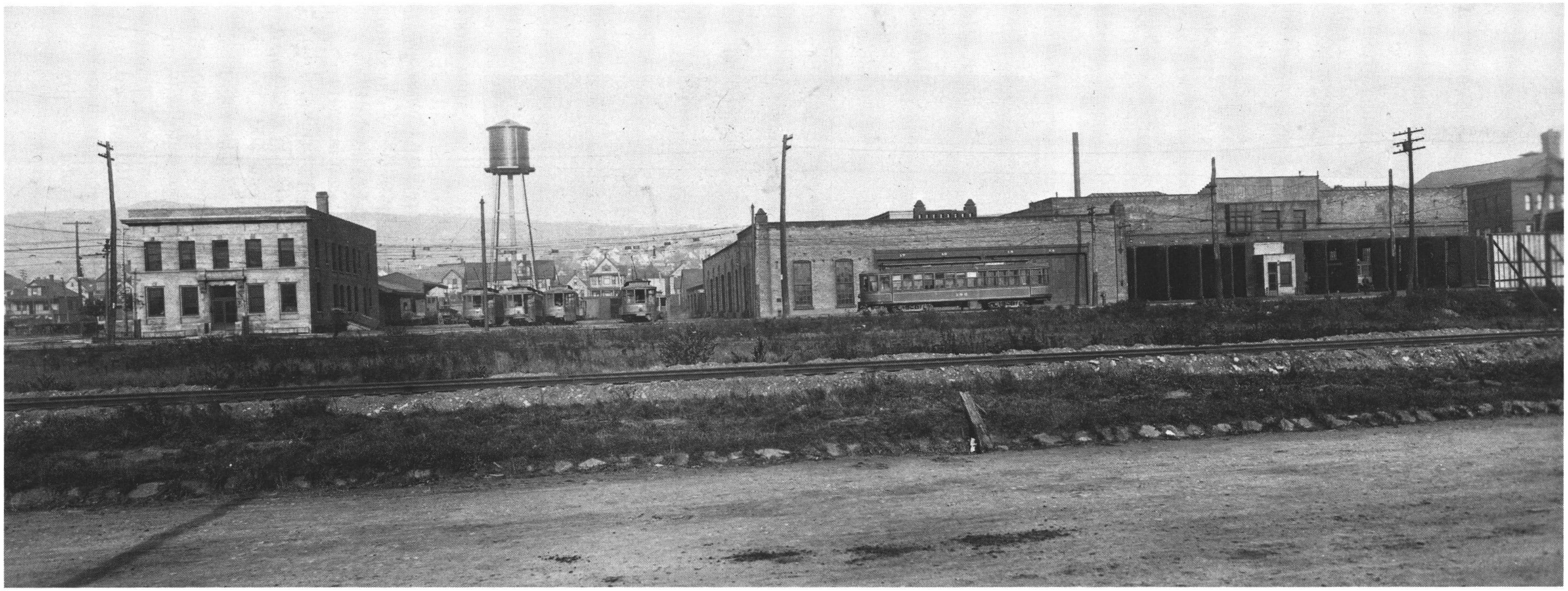
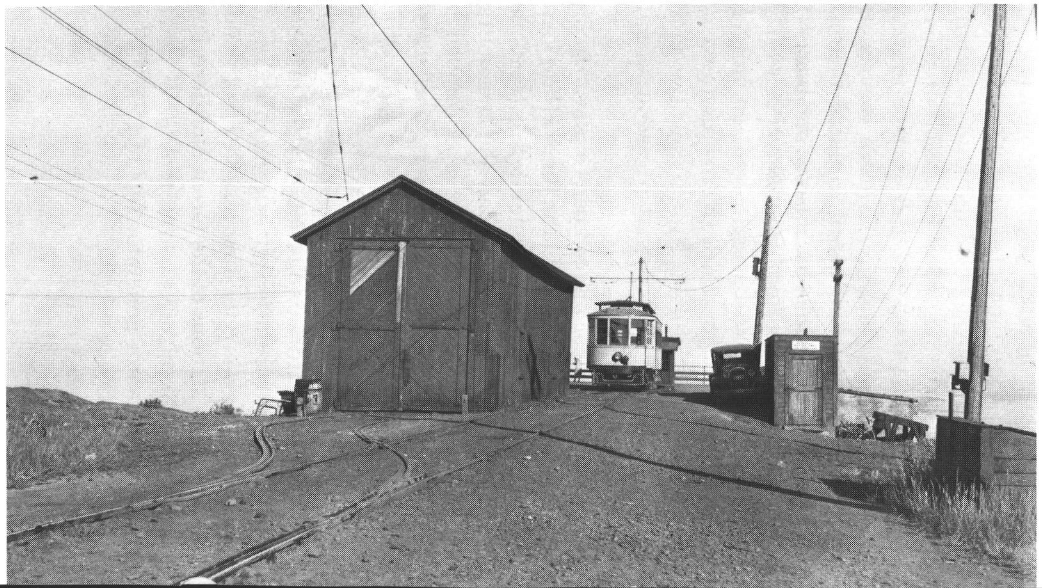
2
1
CUT INTO WEST BOUND TRACK 1930
SUPERIOR STREET
TO CONNECTION WITH SOO LINE R.R.

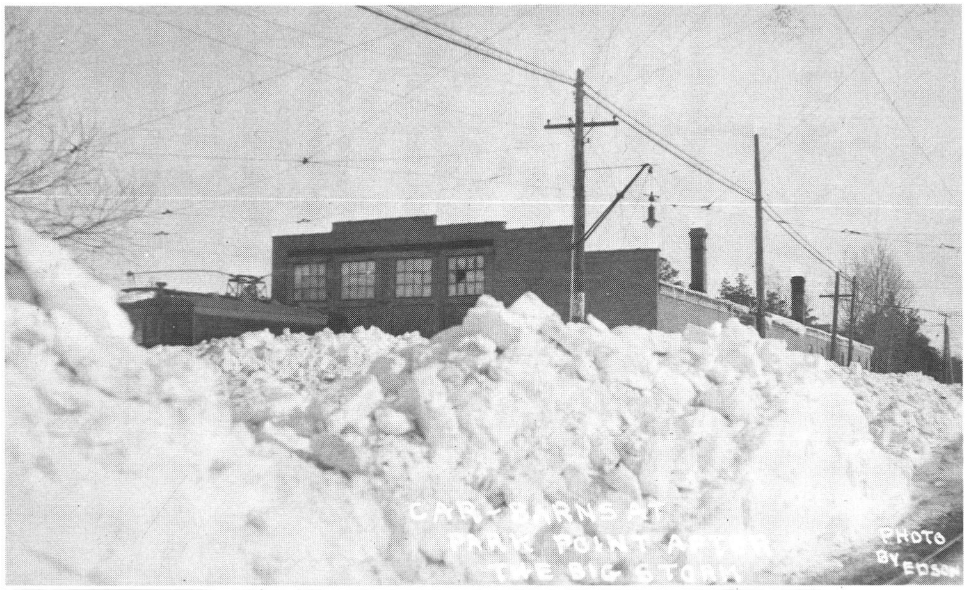


Above: Office, shops, and carhouse on W. Superior St. between 26th Ave. W. (right) and 27th Ave. W. (left) in 1913. From left to right are: office building (storage sheds to the rear), nine-track car storage yard, four-track paint shop (carpenter, machine, blacksmith shops and storeroom to the rear), and thirteen-track carhouse. (DSR; Wayne C. Olsen collection)

Below left: The "Highland Ave." line carhouse at the top of the incline railway, May, 1938. (Herman Rinke)

Below right: The Park Point carhouse as it appeared in 1922; note that two of the three yard tracks are now enclosed by an addition to the building. (Photo by Edson; Wayne C. Olsen collection)





SUPERIOR

Original Carhouse

The original horsecar barn and stables were located on 0.144 acres of land at 5th St. and Newton Ave. (25th Ave. E.). They were being rebuilt during October 1889. Presumably this was also used by the very first electric cars. The disposition is not recorded.

Catlin Ave. and Belknap St.

A contract was awarded in December 1890 for construction of a carhouse at this location. Subsequent contracts were awarded in December 1891 for carhouse and office; November 1892, powerhouse and carhouse; and January 1893, carhouse addition.

The 1900 Ford, Bacon & Davis Report listed the these structures at this location on 0.8035 acres of land.
General Office building, 10' x 20', frame construction.
Storage Shed, 100' x 110', one-story frame construction, containing seven tracks with wood pits under five tracks; capacity nineteen 20 ft. cars.
Storage Shed, 50' x 100', frame construction.
Oil House.
Salt House.
Foundry building.
Two waiting rooms.
Blacksmith and Machine shop.

After DSR acquired the property the shop facilities were closed and all shop operations moved to the DSR facility at 26th Ave. W. and Superior St. effective September 8th, 1900. When DSR completed construction of the new carhouse in Superior, these old frame buildings were sold.

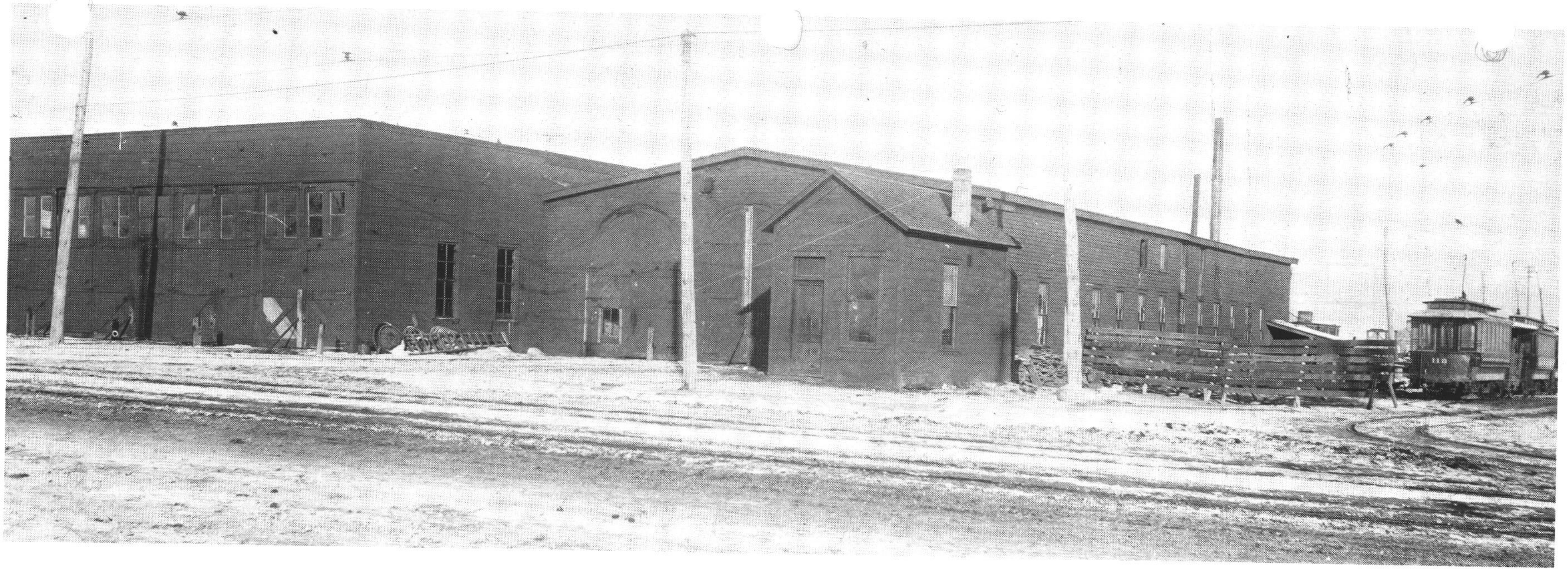
Tower Ave. and 28th St.

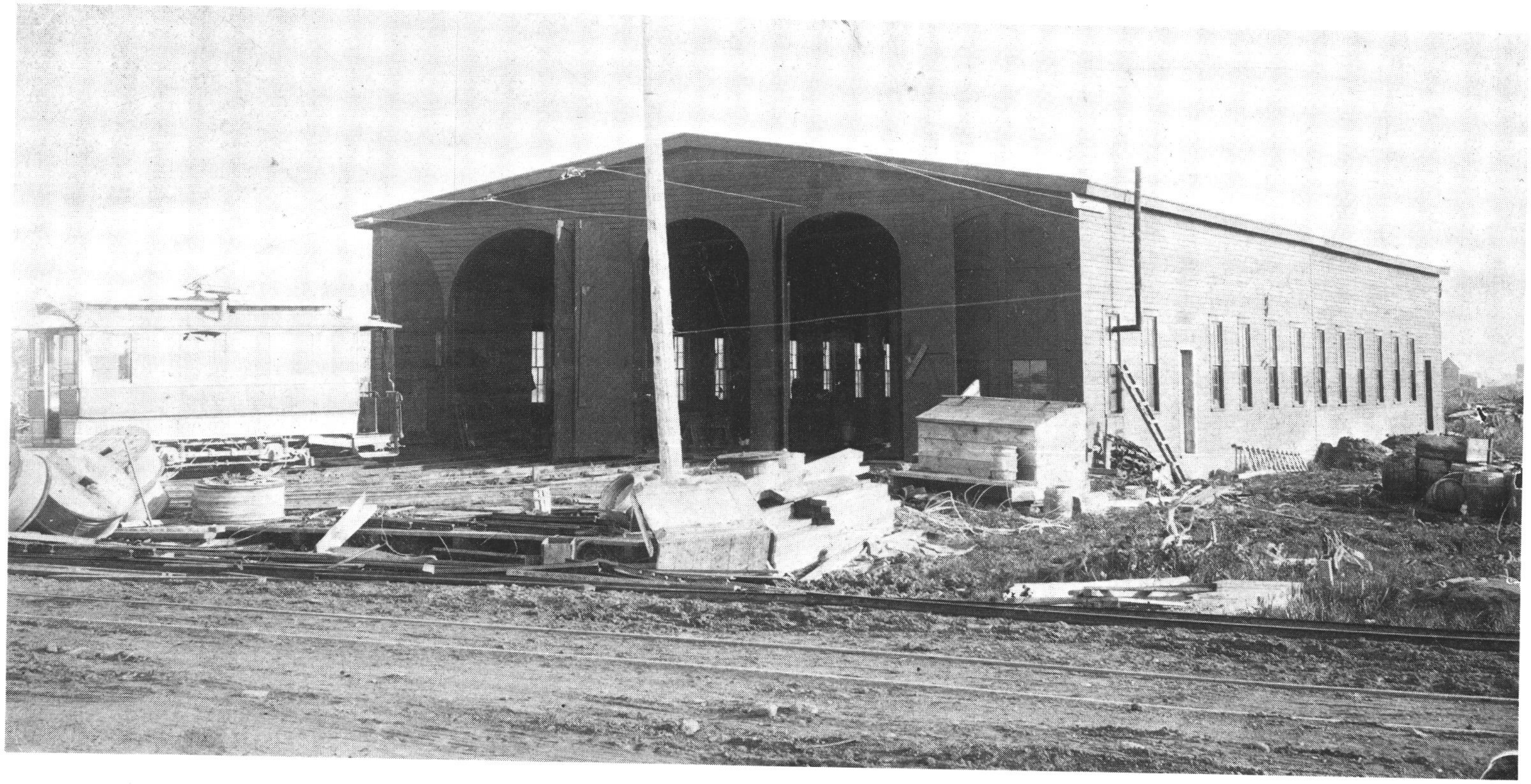
The Superior city statistician in 1892 reported that the company had two carhouses. One of wood construction at Belknap St. and Catlin Ave.; and one of brick, stone, and iron construction on Tower Ave. near 28th St. However no other reference of any kind in any other records has been lcoated with regard to a carhouse at this location.

4th St. and Ogden Ave.

DSR constructed a new brick carhouse and office building at this location, completed December 19, 1902. During 1908 four storage tracks and a wye were added. As of January 1, 1927, this facility contained .662 miles of track.

It was converted into a bus garage when the streetcars were replaced by buses.



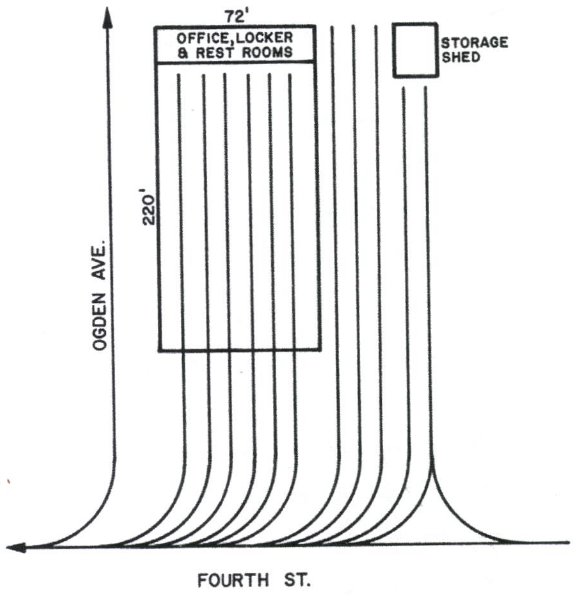


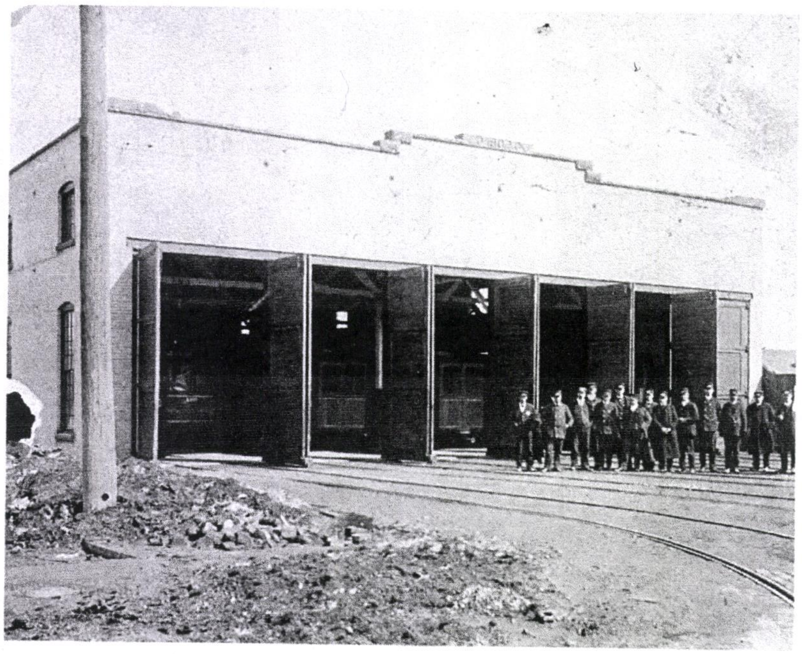
Left: The Superior carhouse at Belknap St. and Catlin Ave. about 1891. Car 102 is at the left. Construction materials are stockpiled along the street.

Above: Another view of the same location taken about 1893 after completion of additional buildings. 110 heads the line of cars on the storage track at the right.

(Both photographs Wayne C. Olsen collection)

DULUTH STREET RAILWAY
SUPERIOR, WISCONSIN
CARHOUSE
1908


72'
OFFICE, LOCKER
& REST ROOMS
STORAGE
SHED
220'
OGDEN AVE.
FOURTH ST.



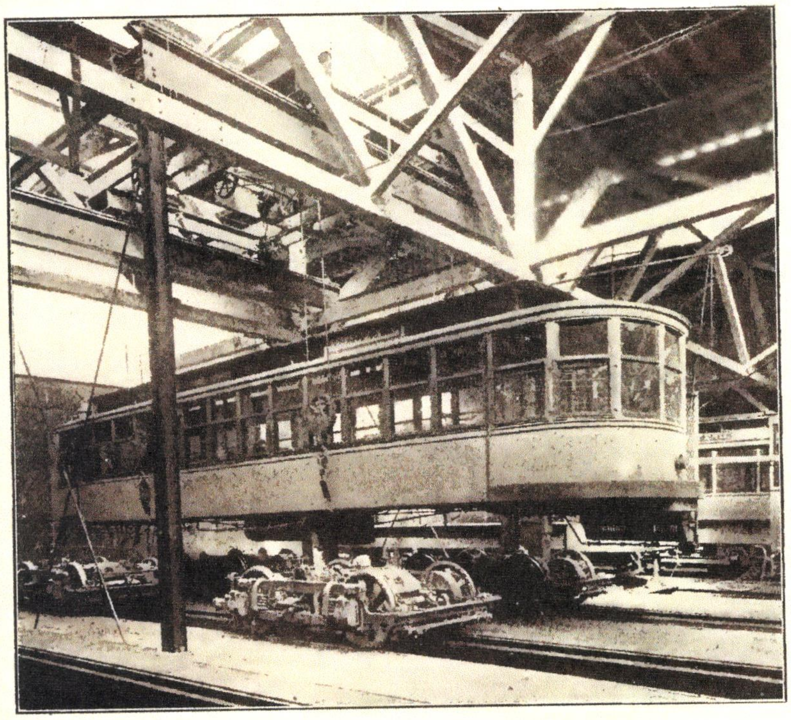
The new Superior carhouse at 4th St. and Ogden Ave. shortly after completion in 1902. (Wayne C. Olsen collection)

SRJ 11-19-1904

ELECTRIC TRAVELING HOIST USED IN DULUTH

The interesting electric traveling hoist shown in the accompanying cut has been installed recently in the shops of the Duluth Street Railway Company by the Northern Engineering Works, of Detroit, Mich. The apparatus in question consists of a 20-ton double-drum electric trolley hoist with four lift hooks. The trolley has a frame of structural steel. One 25-hp direct-current motor is used to hoist the load, while the travel for the trolley is operated by one 7½-hp motor. The control is from the floor. The hoisting speed for full load is 10 ft. per minute, and for lighter loads about 25 ft. per minute; traveling speeds vary from 100 ft. to 150 ft. per minute. These speeds are, of course, much greater than when the work is performed by hand power. The entire crane has a minimum safety factor of 5. Cut spur gearing is used throughout, and all of the sheaves have machined grooves.

The load is automatically sustained by a mechanical brake, and also by an electric brake, which will set automatically when the current is off. A limit stop is provided, attached to a limit switch, which throws off the current when the hook reaches a desired point in the lift, thus preventing the over-travel of the hoist. The steel runway which supports the traveling hoist consists of four Z-bar columns supporting the double I-beam runway girders, between which the lifting hooks are hung. The stresses on the structural beams are thus well balanced and insure proper rigidity in handling the load.



ELECTRIC TRAVELING HOIST HANDLING CAR-BODY IN SHOP OF THE DULUTH STREET RAILWAY COMPANY

In operation, this crane is used principally to lift car bodies from one set of trucks to another, and the hoist covers two lines of tracks. Steel clamps are attached to the car bodies, to which the crane hooks are fixed, and as all the blocks travel at the same rate of speed the car body is lifted from one set of trucks and the hoist traveling motor is put into operation, transferring the body from one set of trucks to the other. This is work for but a few moments, and only one man is required to do the lifting and traveling, although it is advantageous to have helpers to properly locate the trucks under the body when the body is lowered. It is claimed for this machine that it saves a large amount of labor and very soon pays for its cost. It can be manufactured in various capacities to suit the weight of the car body, and can be used with either direct-current or alternating-current motors of any voltage.

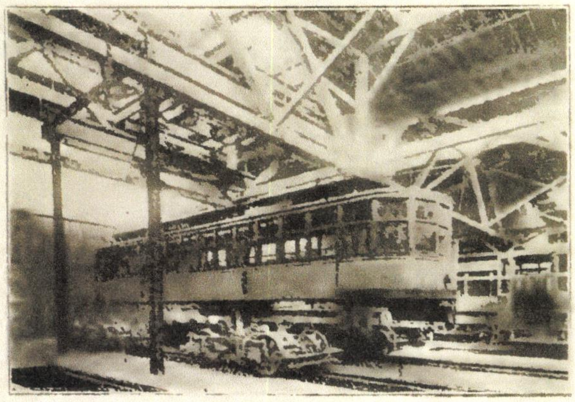
◆◆

SRR 3-15-1905

New Shops of the Duluth Street Railway Co.

The Duluth Street Railway Co. recently completed an addition to its car shops measuring 100 x 150 ft., a large part of which will be used for a new paint shop. Eight cars may be painted at once in this shop. The remainder of the ground floor of this addition will be used for a store room and for wood working machinery, and on the second story a new drawing room has been provided which measures 20 x 60 ft.

The company has recently placed in its shops a number of new machines comprising an electrical compressor, built by the National Electric Co., of Milwaukee, which has a capacity of 200 cu. ft. of air at a pressure of 90 lb.; also a new compressed air hammer of 400-lb. capacity and new shears of 20,000-lb. capacity. The shop also contains a small crane used for lifting car bodies, trucks, etc. The hoist consists of a large special trolley with double drums with four lift hooks mounted on a structural steel runway which spans the car tracks. The trolley has a frame of structural steel. The lifting capacity is 20 tons and the crane is operated by a 25-h. p. direct current electric motor which lifts the load. The travel of the hoist is operated by a 7½-h. p. electric motor which is controlled from the floor. The hoisting speed at full load is 10 ft. per minute and for lighter loads is about 25 ft. per minute. The speed of the travel is from 100 to 150 ft. per minute. The gearing throughout is cut spur gearing and the sheaves have machined grooves. The entire crane has a factor of safety of five.



HOIST FOR CAR BODIES.

The load is sustained automatically by a mechanical brake which will set when the current is off. A limit stop is provided in connection with a limit switch, which throws off the current when the hooks reach the desired point in the lift, thus preventing the over travel of the hoist. The steel runway which supports the hoist consists of four Z-bar columns supporting the double I beam runway girders.

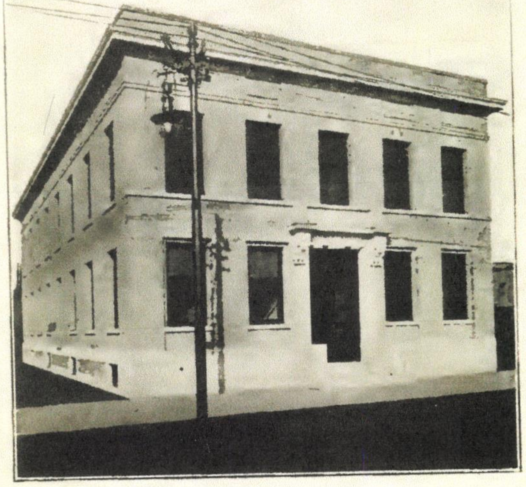
This crane is used principally to lift the car bodies from one set of trucks to another, and the hoist covers two lines of tracks, as will be seen in the illustration. Steel clamps are attached to the car bodies to which crane hooks are fixed and as all the blocks travel at the same speed, the body is lifted from one set of trucks and the travel motor put in operation, transferring the body to another set of trucks. This operation of lifting and transferring the body requires but a few moments and only one man is necessary to attend to the lifting and traveling, although it is necessary to have helpers to locate the trucks under the body when the latter is lowered. The crane was built by the Northern Engineering Works, of Detroit, Mich., and can be arranged for use with either direct or alternating current motors of any voltage.

◆◆

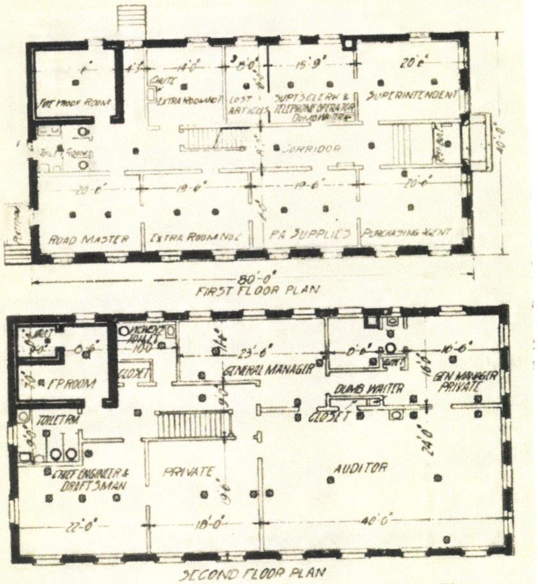
4-11-1908

NEW OFFICE BUILDING OF THE DULUTH STREET RAILWAY.

The Duluth Street Railway Company of Duluth, Minn., has recently completed a new 2-story office building, 40 by 80 feet in size. A photograph of the new structure is reproduced herewith. The general offices were moved to the new building last month from the power house, where they have been located ever since the company began using electricity as a motive power. The new building is located at the northeast corner of the block containing the company's car house and shops, at the intersection of Twenty-seventh avenue and Superior street.



Duluth Office Building—Exterior View.


FIRE PROOF ROOM
CHUTE
EXTRA ROOM NO. 1
LOST ARTICLES
SUPT'S CLERK & TELEPHONE OPERATOR
DUMB WAITER
SUPERINTENDENT
TOILET ROOMS
CORRIDOR
ROAD MASTER
EXTRA ROOM NO. 2
P.A. SUPPLIES
PURCHASING AGENT
80'-0"
40'-0"
20'-0"
19'-6"
14'-0"
15'-9"
FIRST FLOOR PLAN
VAULT
F.P. ROOM
WOMEN'S TOILET
CLOSET
GENERAL MANAGER
DUMB WAITER
CLOSET
GEN. MANAGER PRIVATE
TOILET RM.
CHIEF ENGINEER & DRAFTSMAN
PRIVATE
AUDITOR
23'-6"
10'-0"
22'-0"
18'-0"
40'-0"
24'-0"
SECOND FLOOR PLAN

Duluth Office Building—First and Second Floor Plans.

As will be noted from the engraving the exterior is of an attractive though simple design. The building is constructed of light-colored pressed brick, with stone foundations and trimmings and a sanded galvanized iron cornice. The arrangement of the first and second floors is shown in the accompanying plans.

The basement contains the coal room, ash bin and a storeroom. On the main floor are located the offices of the roadmaster, purchasing agent, superintendent and superintendent's clerk, also a fireproof room, toilet room, two extra rooms and rooms for purchasing agent's supplies and for lost articles. The second floor contains the offices of the general manager, auditor and chief engineer, also toilet rooms and a fireproof room containing a vault.

The building was designed by German & Lignell, architects, of Duluth.

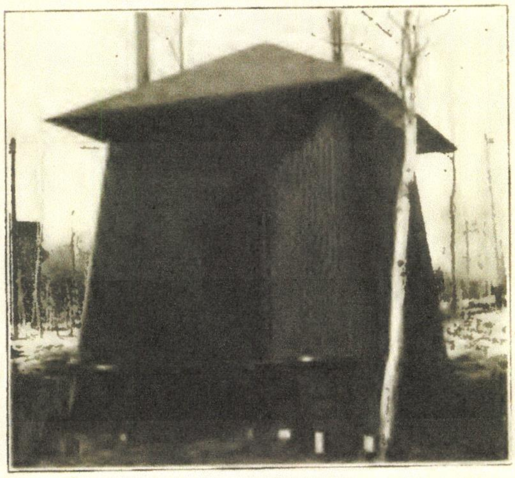
3-7-1908

ELECTRIC RAILWAY REVIEW Vol. XIX. No. 10.

SHELTER STATIONS OF THE DULUTH STREET RAILWAY.

BY HERBERT WARREN, GENERAL MANAGER.

The Duluth Street Railway has recently erected a number of shelter stations, as shown in the accompanying engravings, to meet the requirements at points in the residence districts where a considerable number of persons are in the habit of waiting for cars. The type of shelter chosen is simple, yet very practical. There are no side walls, but protection from the weather is afforded by the arrangement of the interior partitions. The shelter is divided into four equal compartments by these partition walls, which radiate from the center to the four corners. The details of the construction are shown in the engraving.



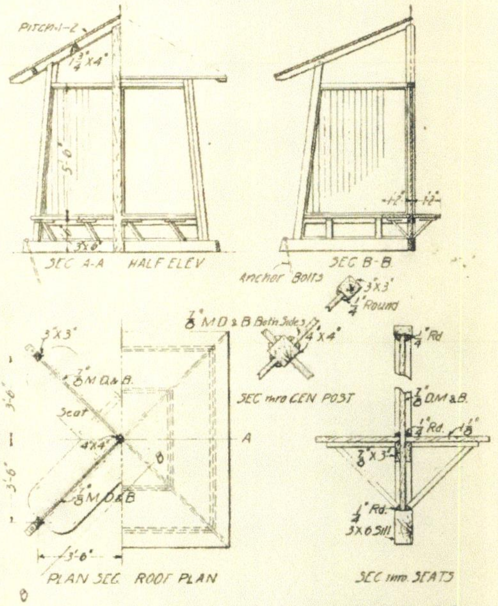
Duluth Shelter Stations—Front View.

We formerly placed old car bodies in such locations, but they were unsightly from the start, and they were invariably demolished by vandals in a very short time and became a nuisance in the neighborhood. We found this to be the invariable fate of such inclosed shelters even in the best residence districts, and we had to discontinue using them.

Of late years when there has been a demand for us to set up an old car body in such a location we have replied that we would furnish the car body and bear the expense of setting it up, provided we could get someone in the neighborhood to accept a bill of sale for it at a nominal figure and become responsible for it. We made it plain to such persons that they were likely to be put to the expense of moving the car in case it was found to be a public nuisance. Some that were put up in this way fared a little better than those which we formerly took the responsibility of putting up. Vandals seem to have a little more respect for the property of private individuals than they have for the property of corporations. However, they were in most cases treated almost as badly as when we owned them, and we gave up entirely having anything to do whatever with any inclosed shelter at such places unless conditions were such as to warrant an attendant being kept constantly in charge.

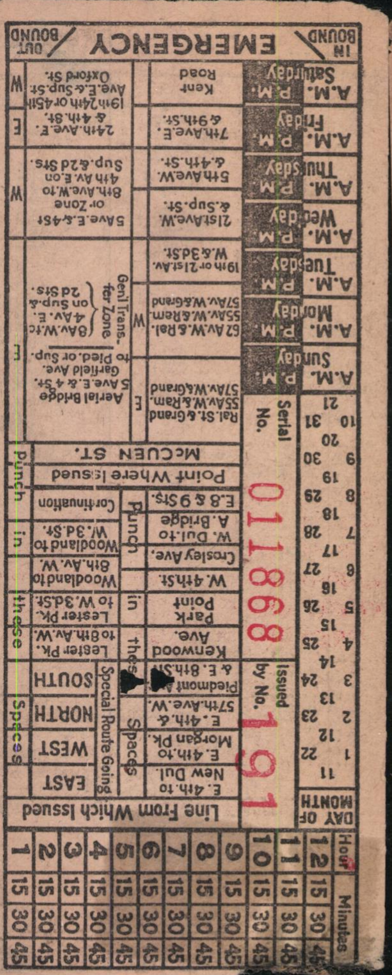
In some localities and at transfer points we have put up small inclosed buildings which are rented to be used as confectionery and cigar stands, with the understanding that they are to be kept open at all hours during which cars are passing, but such buildings are not welcomed in the best residence districts, and even if they were there would be nothing to warrant maintaining such stands in those districts.

After we had found from experience that it was absolutely impracticable to maintain any sort of inclosed shelter in the residence districts we decided to put up something that would merely break the force of the wind and keep off heavy rain, and the present shelter is the result. It does not make any pretensions of being a waiting room, but in a blizzard it is a great deal better than nothing. It is so constructed that it is not as likely to become a nuisance as if it were inclosed and it will take a small boy with a jackknife some time to whittle it down. The shelter was designed by German & Lignell, architects, of Duluth.



Duluth Shelter Stations—Details Showing Method of Construction.

OPERATIONS
(WITH A DIVIDER POCKET CONTAINING TRANSFERS)


EMERGENCY

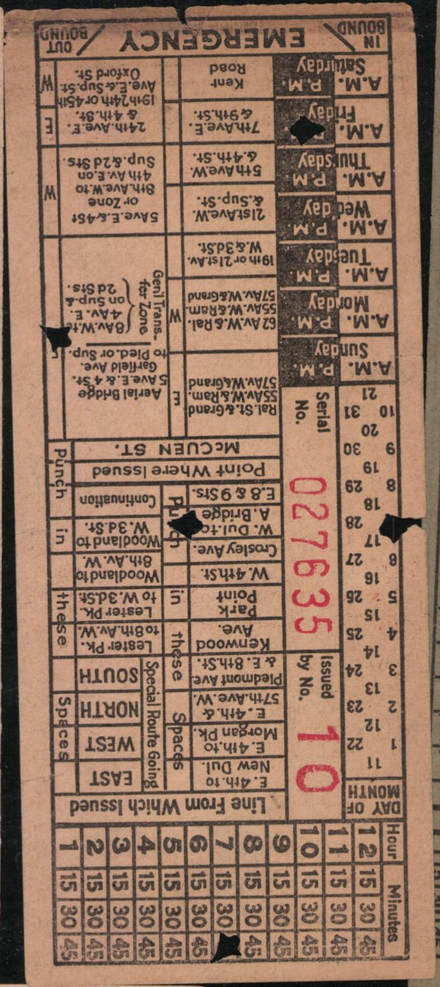
Line From Which Issued

McCUEN ST.

Point Where Issued

011868

Issued by No. 191


EMERGENCY

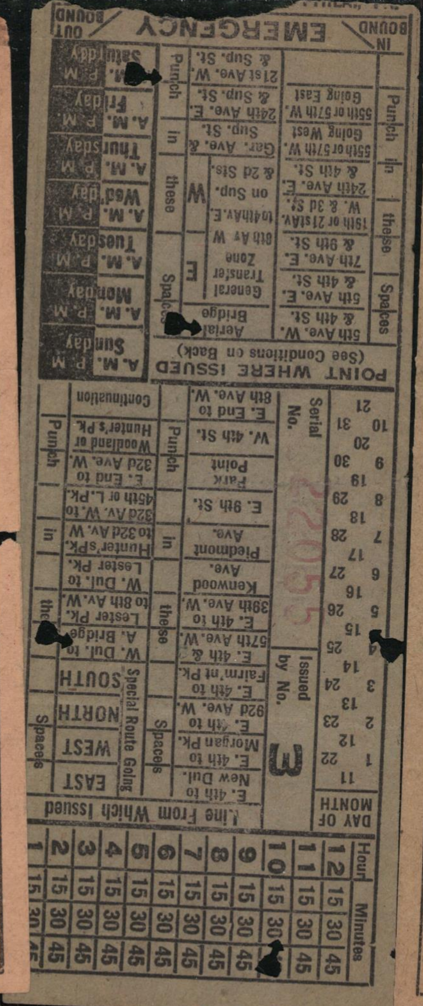
Line From Which Issued

McCUEN ST.

Point Where Issued

0276635

Issued by No. 10

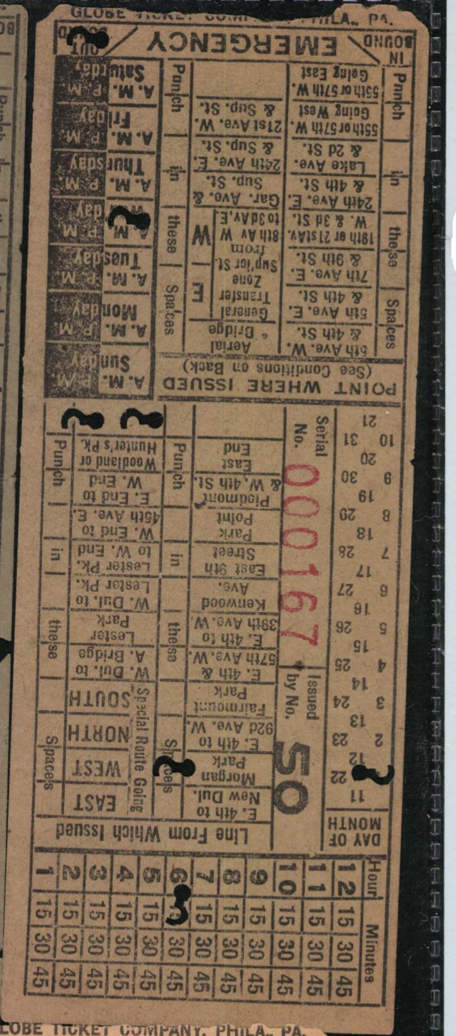

EMERGENCY

POINT WHERE ISSUED (See Conditions on Back)

Line From Which Issued

22055

Issued by No. 3


GLOBE TICKET COMPANY, PHILA., PA.

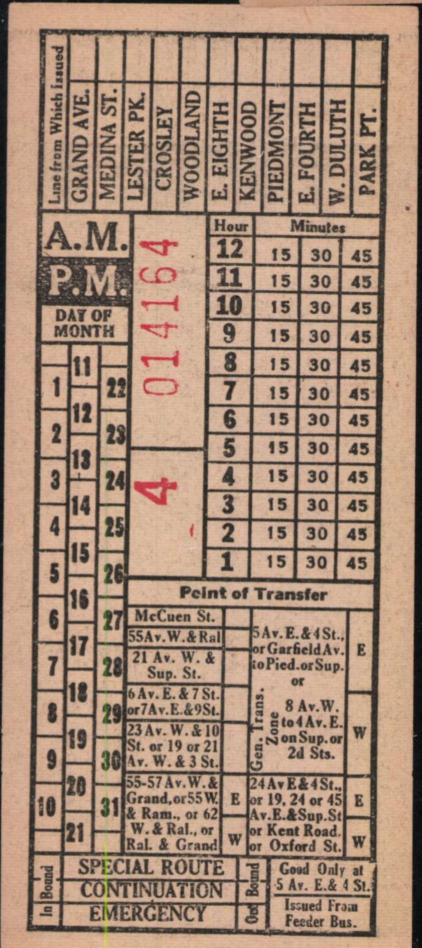
EMERGENCY

POINT WHERE ISSUED (See Conditions on Back)

Line From Which Issued

000167

Issued by No. 50


Line from Which Issued: GRAND AVE. | MEDINA ST. | LESTER PK. | CROSLEY | WOODLAND | E. EIGHTH | KENWOOD | PIEDMONT | E. FOURTH | W. DULUTH | PARK PT.

A.M.

P.M.

DAY OF MONTH: 1–31

014164

4

Hour: 12 11 10 9 8 7 6 5 4 3 2 1 — Minutes: 15 30 45

Point of Transfer

McCuen St.

55 Av. W. & Ral

21 Av. W. & Sup. St.

6 Av. E. & 7 St. or 7 Av. E. & 9 St.

23 Av. W. & 10 St. or 19 or 21 Av. W. & 3 St.

55-57 Av. W. & Grand, or 55 W. & Ram., or 62 W. & Ral., or Ral. & Grand

5 Av. E. & 4 St., or Garfield Av. to Pied. or Sup. or 8 Av. W. to 4 Av. E. on Sup. or 2d Sts. — Gen. Trans. Zone

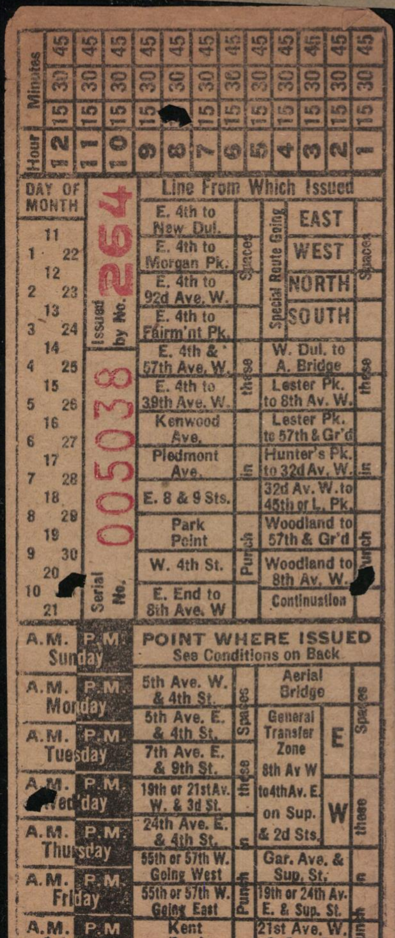
24 Av. E. & 4 St., or 19, 24 or 45 Av. E. & Sup. St or Kent Road, or Oxford St.

E W E W

In Bound — SPECIAL ROUTE — CONTINUATION — EMERGENCY — Out Bound

Good Only at 5 Av. E. & 4 St.

Issued From Feeder Bus.


Hour: 12 11 10 9 8 7 6 5 4 3 2 1 — Minutes: 15 30 45

DAY OF MONTH: 1–31

Issued by No. 264

Serial No. 005038

Line From Which Issued

E. 4th to New Dul.

E. 4th to Morgan Pk.

E. 4th to 92d Ave. W.

E. 4th to Fairm'nt Pk.

E. 4th & 57th Ave. W.

E. 4th to 39th Ave. W.

Kenwood Ave.

Piedmont Ave.

E. 8 & 9 Sts.

Park Point

W. 4th St.

E. End to 8th Ave. W.

Special Route Going: EAST WEST NORTH SOUTH

W. Dul. to A. Bridge

Lester Pk. to 8th Av. W.

Lester Pk. to 57th & Gr'd

Hunter's Pk. to 32d Av. W.

32d Av. W. to 45th or L. Pk.

Woodland to 57th & Gr'd

Woodland to 8th Av. W.

Continuation

Spaces — Punch — in — these

POINT WHERE ISSUED — See Conditions on Back

A.M. P.M. Sunday

A.M. P.M. Monday

A.M. P.M. Tuesday

A.M. P.M. Wed'day

A.M. P.M. Thursday

A.M. P.M. Friday

A.M. P.M. Saturday

5th Ave. W. & 4th St.

5th Ave. E. & 4th St.

7th Ave. E. & 9th St.

19th or 21st Av. W. & 3d St.

24th Ave. E. & 4th St.

55th or 57th W. Going West

55th or 57th W. Going East

Kent Road

Aerial Bridge

General Transfer Zone 8th Av W to 4th Av. E. on Sup. & 2d Sts.

Gar. Ave. & Sup. St.

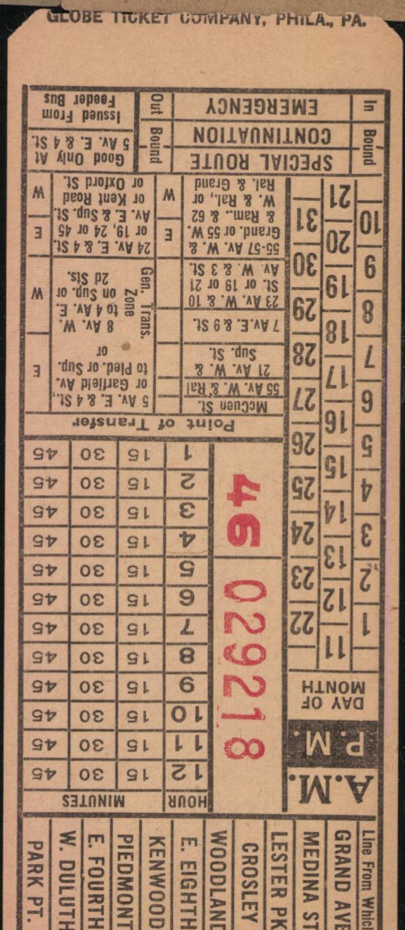
19th or 24th Av. E. & Sup. St.

21st Ave. W. & Sup. St.

E W

IN BOUND — EMERGENCY — OUT BOUND

GLOBE TICKET COMPANY, PHILA., PA.


GLOBE TICKET COMPANY, PHILA., PA.

A.M. P.M.

DAY OF MONTH

029218

46

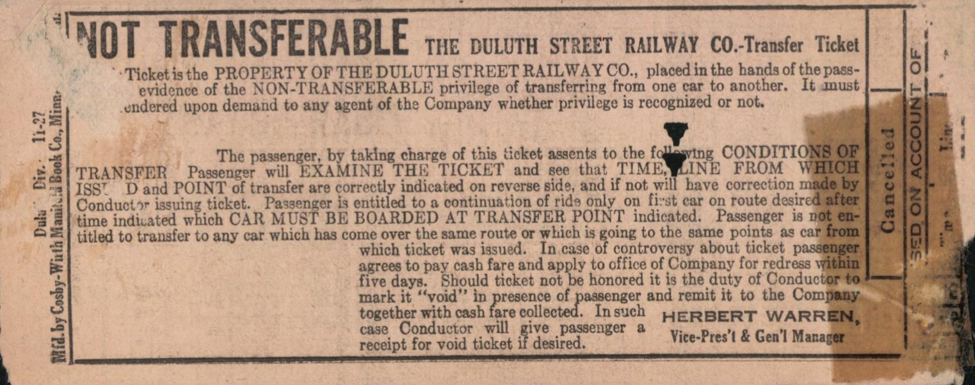
Point of Transfer

SPECIAL ROUTE — CONTINUATION — EMERGENCY

Good Only At 5 Av. E. & 4 St.

Issued From Feeder Bus

PV119ED
AVERY™



Dulu Div. 11-27
Mfd. by Cosby-Wirth Manifold Book Co., Minn.

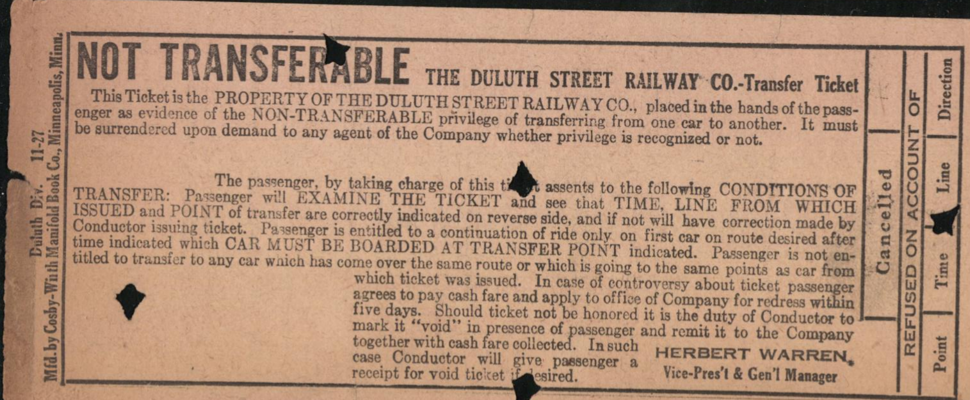
NOT TRANSFERABLE THE DULUTH STREET RAILWAY CO.-Transfer Ticket

Ticket is the PROPERTY OF THE DULUTH STREET RAILWAY CO., placed in the hands of the pass-
evidence of the NON-TRANSFERABLE privilege of transferring from one car to another. It must
endered upon demand to any agent of the Company whether privilege is recognized or not.

The passenger, by taking charge of this ticket assents to the following CONDITIONS OF TRANSFER Passenger will EXAMINE THE TICKET and see that TIME, LINE FROM WHICH ISSUED and POINT of transfer are correctly indicated on reverse side, and if not will have correction made by Conductor issuing ticket. Passenger is entitled to a continuation of ride only on first car on route desired after time indicated which CAR MUST BE BOARDED AT TRANSFER POINT indicated. Passenger is not entitled to transfer to any car which has come over the same route or which is going to the same points as car from which ticket was issued. In case of controversy about ticket passenger agrees to pay cash fare and apply to office of Company for redress within five days. Should ticket not be honored it is the duty of Conductor to mark it "void" in presence of passenger and remit it to the Company together with cash fare collected. In such case Conductor will give passenger a receipt for void ticket if desired.

HERBERT WARREN,
Vice-Pres't & Gen'l Manager

Cancelled
SED ON ACCOUNT OF
Line



Duluth Div. 11-27
Mfd. by Cosby-With Manifold Book Co., Minneapolis, Minn.

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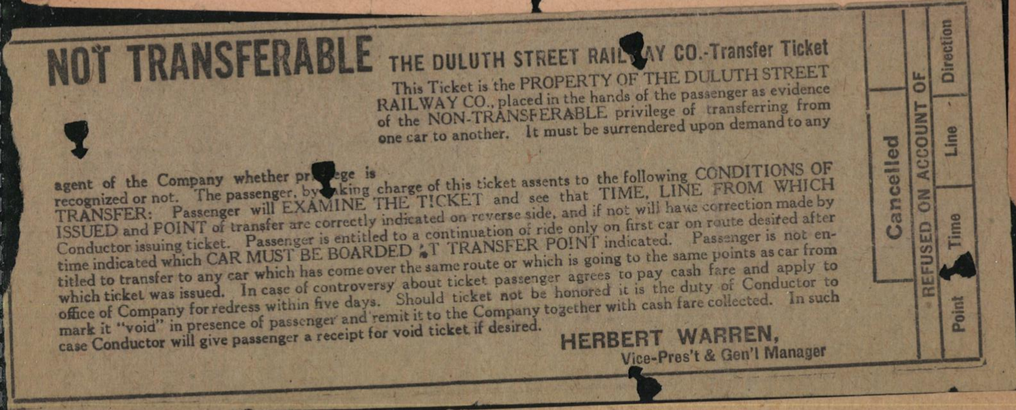
HERBERT WARREN,
Vice-Pres't & Gen'l Manager

Cancelled
REFUSED ON ACCOUNT OF
Point | Time | Line | Direction



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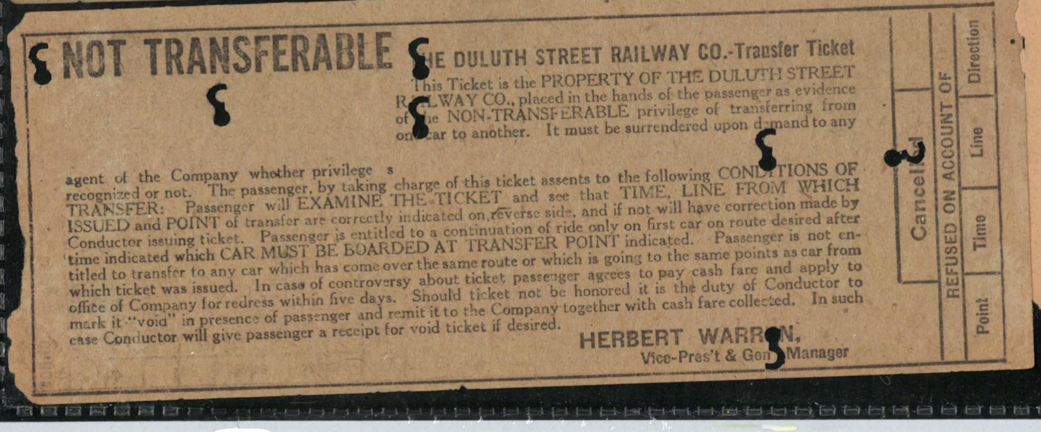
HERBERT WARREN,
Vice-Pres't & Gen'l Manager

Cancelled
REFUSED ON ACCOUNT OF
Point | Time | Line | Direction



NOT TRANSFERABLE THE DULUTH STREET RAILWAY CO.-Transfer Ticket

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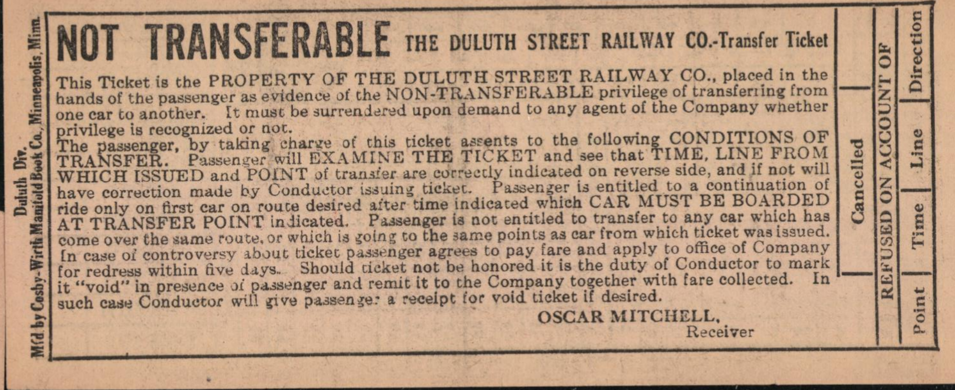
HERBERT WARREN,
Vice-Pres't & Gen'l Manager

Cancelled
REFUSED ON ACCOUNT OF
Point | Time | Line | Direction



Duluth Div.
Mfd by Cosby-Wirth Manifold Book Co., Minneapolis, Minn.

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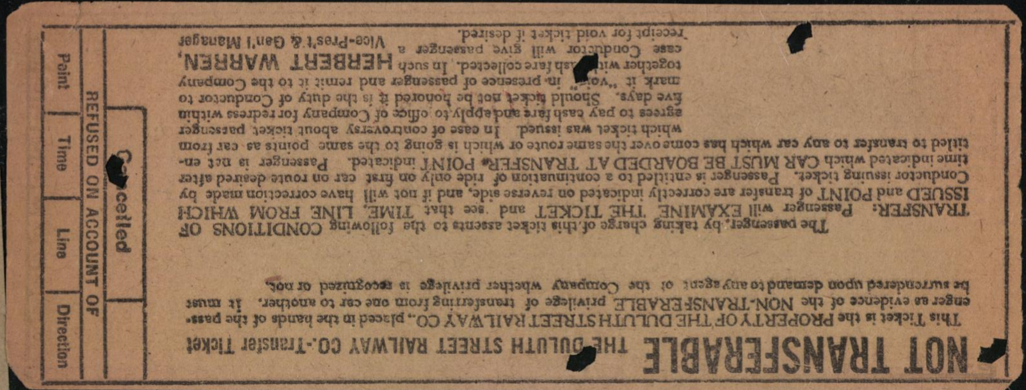
OSCAR MITCHELL,
Receiver

Cancelled
REFUSED ON ACCOUNT OF
Point | Time | Line | Direction



NOT TRANSFERABLE THE DULUTH STREET RAILWAY CO.-Transfer Ticket

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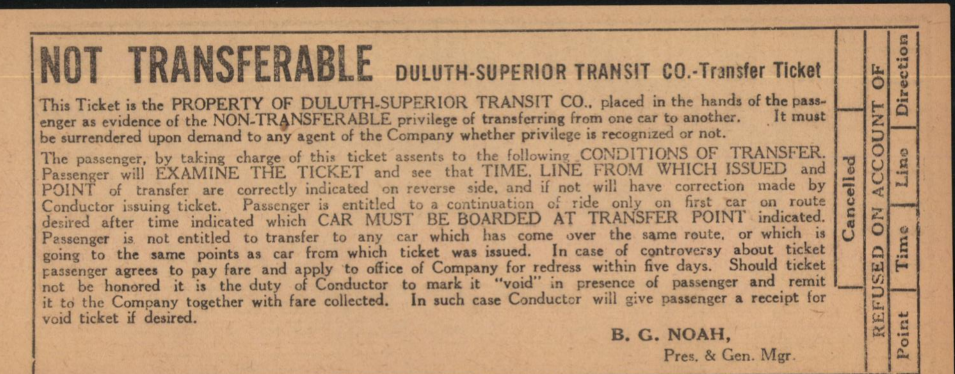
HERBERT WARREN,
Vice-Pres't & Gen'l Manager

Cancelled
REFUSED ON ACCOUNT OF
Point | Time | Line | Direction



NOT TRANSFERABLE DULUTH-SUPERIOR TRANSIT CO.-Transfer Ticket

This Ticket is the PROPERTY OF DULUTH-SUPERIOR TRANSIT CO., placed in the hands of the passenger as evidence of the NON-TRANSFERABLE privilege of transferring from one car to another. It must be surrendered upon demand to any agent of the Company whether privilege is recognized or not.

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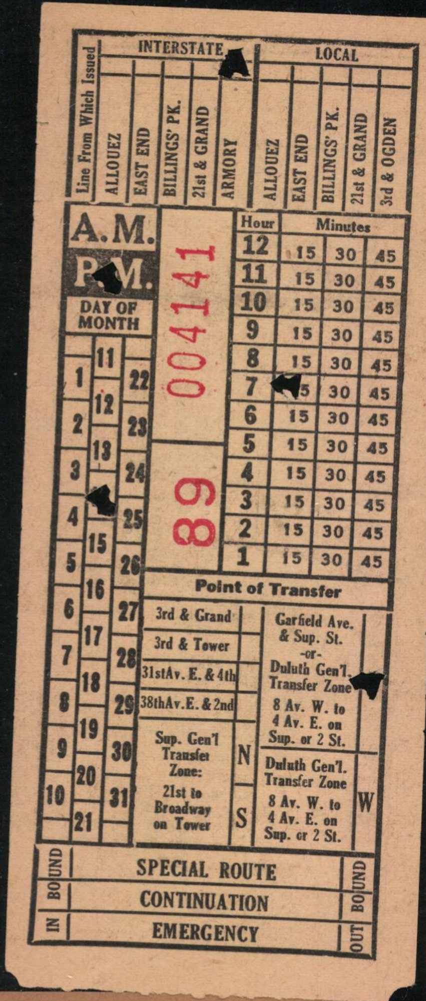
B. G. NOAH,
Pres. & Gen. Mgr.

Cancelled
REFUSED ON ACCOUNT OF
Point | Time | Line | Direction



Line From Which Issued	INTERSTATE					LOCAL				
	ALLOUEZ	EAST END	BILLINGS' PK.	21st & GRAND	ARMORY	ALLOUEZ	EAST END	BILLINGS' PK.	21st & GRAND	3rd & OGDEN

A.M.
P.M.
DAY OF MONTH

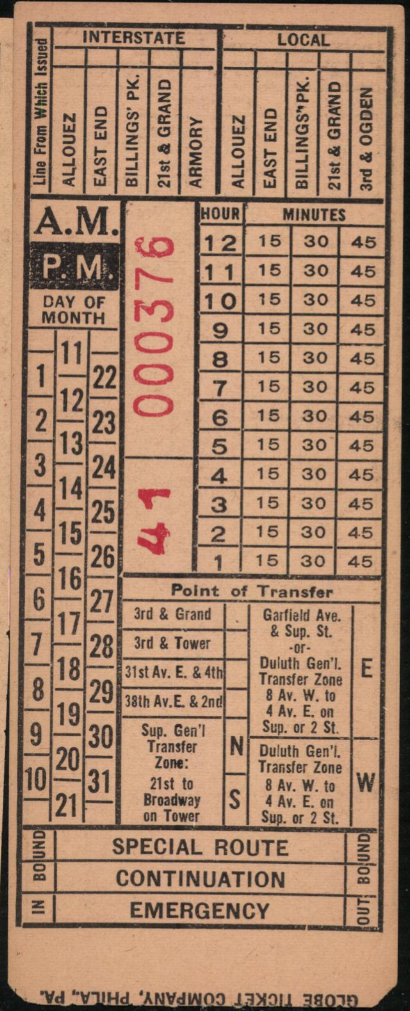
004141
89

Hour	Minutes		
12	15	30	45
11	15	30	45
10	15	30	45
9	15	30	45
8	15	30	45
7	15	30	45
6	15	30	45
5	15	30	45
4	15	30	45
3	15	30	45
2	15	30	45
1	15	30	45

1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20 21
22 23 24 25 26 27 28 29 30 31

Point of Transfer
3rd & Grand
3rd & Tower
31stAv. E. & 4th
38thAv. E. & 2nd
Sup. Gen'l Transfer Zone: 21st to Broadway on Tower
N
S
Garfield Ave. & Sup. St. -or- Duluth Gen'l. Transfer Zone 8 Av. W. to 4 Av. E. on Sup. or 2 St.
E
Duluth Gen'l. Transfer Zone 8 Av. W. to 4 Av. E. on Sup. or 2 St.
W

IN BOUND
SPECIAL ROUTE
CONTINUATION
EMERGENCY
OUT BOUND



Line From Which Issued	INTERSTATE					LOCAL				
	ALLOUEZ	EAST END	BILLINGS' PK.	21st & GRAND	ARMORY	ALLOUEZ	EAST END	BILLINGS' PK.	21st & GRAND	3rd & OGDEN

A.M.
P.M.
DAY OF MONTH

000376
41

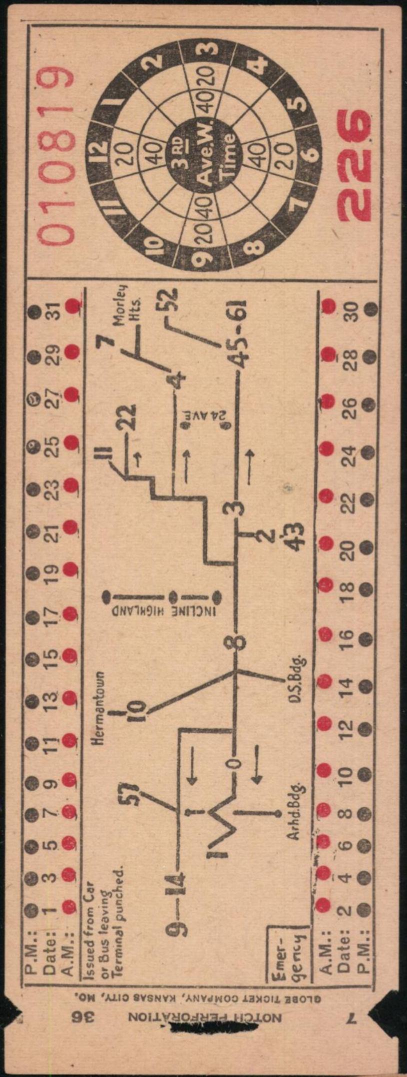
HOUR	MINUTES		
12	15	30	45
11	15	30	45
10	15	30	45
9	15	30	45
8	15	30	45
7	15	30	45
6	15	30	45
5	15	30	45
4	15	30	45
3	15	30	45
2	15	30	45
1	15	30	45

1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20 21
22 23 24 25 26 27 28 29 30 31

Point of Transfer
3rd & Grand
3rd & Tower
31st Av. E. & 4th
38th Av. E. & 2nd
Sup. Gen'l Transfer Zone: 21st to Broadway on Tower
N
S
Garfield Ave. & Sup. St. -or- Duluth Gen'l. Transfer Zone 8 Av. W. to 4 Av. E. on Sup. or 2 St.
E
Duluth Gen'l. Transfer Zone 8 Av. W. to 4 Av. E. on Sup. or 2 St.
W

IN BOUND
SPECIAL ROUTE
CONTINUATION
EMERGENCY
OUT BOUND

GLOBE TICKET COMPANY, PHILA., PA.

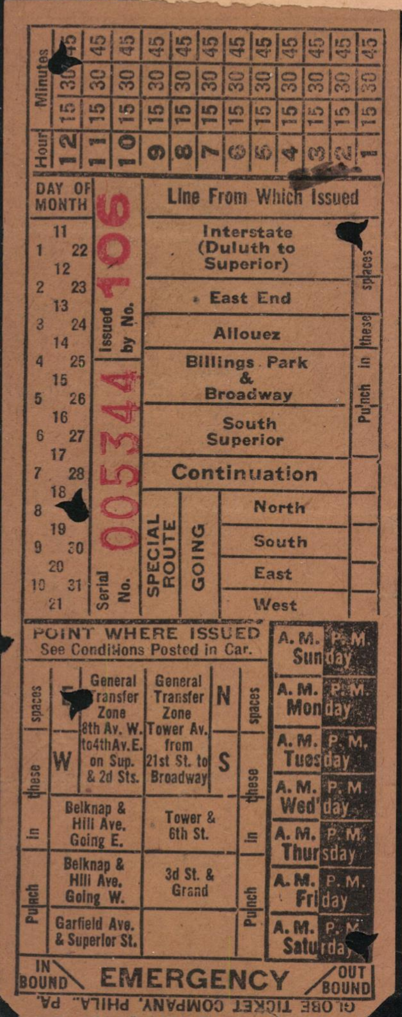


010819
226

P.M.:
Date: 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31
A.M.:
Issued from Car or Bus leaving Terminal punched.

Emer-gency
A.M.:
Date: 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
P.M.:

GLOBE TICKET COMPANY, KANSAS CITY, MO.
7 NOTCH PERFORATION 36



Hour	12	11	10	9	8	7	6	5	4	3	2	1
Minutes	15	15	15	15	15	15	15	15	15	15	15	15
	30	30	30	30	30	30	30	30	30	30	30	30
	45	45	45	45	45	45	45	45	45	45	45	45

DAY OF MONTH
1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20 21
22 23 24 25 26 27 28 29 30 31

Issued by No. 106
Serial No. 005344

Line From Which Issued
Interstate (Duluth to Superior)
East End
Allouez
Billings Park & Broadway
South Superior
Continuation
SPECIAL ROUTE
GOING
North
South
East
West

Punch in these spaces

POINT WHERE ISSUED
See Conditions Posted in Car.

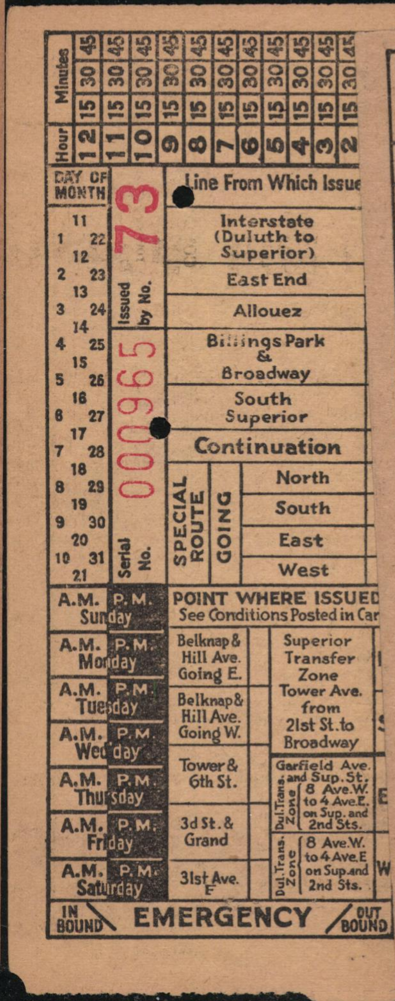
General Transfer Zone 8th Av. W. to 4th Av. E. on Sup. & 2d Sts.
W
General Transfer Zone Tower Av. from 21st St. to Broadway
N
S
Belknap & Hill Ave. Going E.
Tower & 6th St.
Belknap & Hill Ave. Going W.
3d St. & Grand
Garfield Ave. & Superior St.

A.M. P.M. Sunday
A.M. P.M. Monday
A.M. P.M. Tuesday
A.M. P.M. Wed'day
A.M. P.M. Thursday
A.M. P.M. Friday
A.M. P.M. Saturday

Punch in these spaces

IN BOUND
EMERGENCY
OUT BOUND

GLOBE TICKET COMPANY, PHILA., PA.



Hour	12	11	10	9	8	7	6	5	4	3	2
Minutes	15	15	15	15	15	15	15	15	15	15	15
	30	30	30	30	30	30	30	30	30	30	30
	45	45	45	45	45	45	45	45	45	45	45

DAY OF MONTH
1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20 21
22 23 24 25 26 27 28 29 30 31

Issued by No. 73
Serial No. 000965

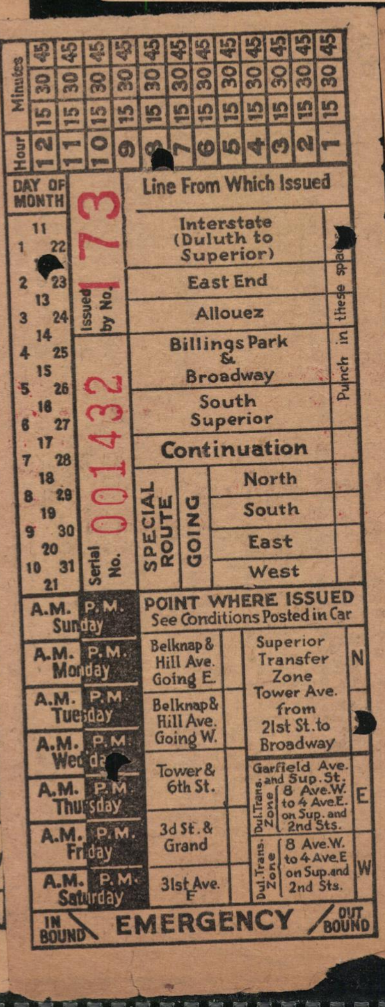
Line From Which Issue
Interstate (Duluth to Superior)
East End
Allouez
Billings Park & Broadway
South Superior
Continuation
SPECIAL ROUTE
GOING
North
South
East
West

POINT WHERE ISSUED
See Conditions Posted in Car

A.M. P.M. Sunday
A.M. P.M. Monday
A.M. P.M. Tuesday
A.M. P.M. Wed'day
A.M. P.M. Thursday
A.M. P.M. Friday
A.M. P.M. Saturday

Belknap & Hill Ave. Going E.
Superior Transfer Zone Tower Ave. from 21st St. to Broadway
Belknap & Hill Ave. Going W.
Tower & 6th St.
Garfield Ave. and Sup. St. 8 Ave. W. to 4 Ave. E. on Sup. and 2nd Sts.
3d St. & Grand
Dul. Trans. Zone 8 Ave. W. to 4 Ave. E on Sup. and 2nd Sts.
31st Ave. E

IN BOUND
EMERGENCY
OUT BOUND



Hour	12	11	10	9	8	7	6	5	4	3	2	1
Minutes	15	15	15	15	15	15	15	15	15	15	15	15
	30	30	30	30	30	30	30	30	30	30	30	30
	45	45	45	45	45	45	45	45	45	45	45	45

DAY OF MONTH
1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20 21
22 23 24 25 26 27 28 29 30 31

Issued by No. 173
Serial No. 001432

Line From Which Issued
Interstate (Duluth to Superior)
East End
Allouez
Billings Park & Broadway
South Superior
Continuation
SPECIAL ROUTE
GOING
North
South
East
West

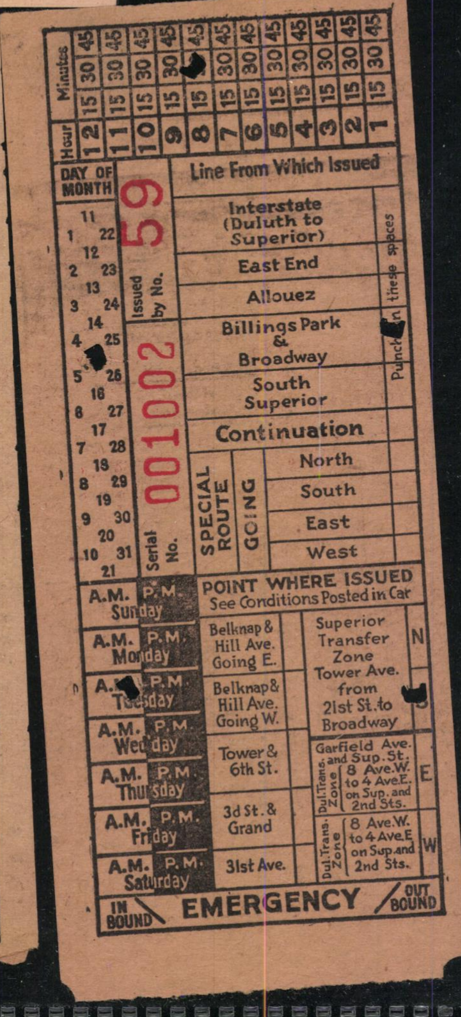
Punch in these spaces

POINT WHERE ISSUED
See Conditions Posted in Car

A.M. P.M. Sunday
A.M. P.M. Monday
A.M. P.M. Tuesday
A.M. P.M. Wed'day
A.M. P.M. Thursday
A.M. P.M. Friday
A.M. P.M. Saturday

Belknap & Hill Ave. Going E.
Superior Transfer Zone Tower Ave. from 21st St. to Broadway
N
Belknap & Hill Ave. Going W.
Tower & 6th St.
Garfield Ave. and Sup. St. 8 Ave. W. to 4 Ave. E. on Sup. and 2nd Sts.
3d St. & Grand
Dul. Trans. Zone 8 Ave. W. to 4 Ave. E. on Sup. and 2nd Sts.
31st Ave. E

IN BOUND
EMERGENCY
OUT BOUND



Hour	12	11	10	9	8	7	6	5	4	3	2	1
Minutes	15	15	15	15	15	15	15	15	15	15	15	15
	30	30	30	30	30	30	30	30	30	30	30	30
	45	45	45	45	45	45	45	45	45	45	45	45

DAY OF MONTH
1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20 21
22 23 24 25 26 27 28 29 30 31

Issued by No. 59
Serial No. 001002

Line From Which Issued
Interstate (Duluth to Superior)
East End
Allouez
Billings Park & Broadway
South Superior
Continuation
SPECIAL ROUTE
GOING
North
South
East
West

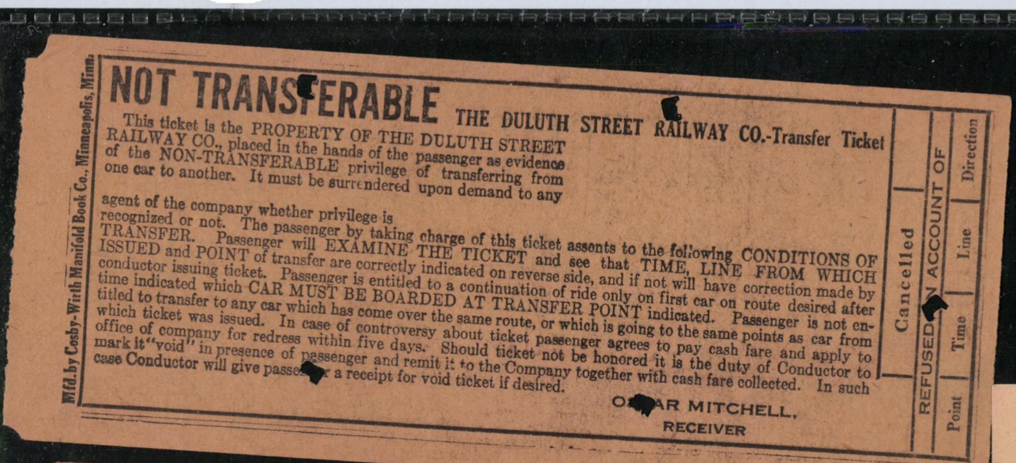
Punch in these spaces

POINT WHERE ISSUED
See Conditions Posted in Car

A.M. P.M. Sunday
A.M. P.M. Monday
A.M. P.M. Tuesday
A.M. P.M. Wed'day
A.M. P.M. Thursday
A.M. P.M. Friday
A.M. P.M. Saturday

Belknap & Hill Ave. Going E.
Superior Transfer Zone Tower Ave. from 21st St. to Broadway
N
S
Belknap & Hill Ave. Going W.
Tower & 6th St.
Garfield Ave. and Sup. St. 8 Ave. W. to 4 Ave. E. on Sup. and 2nd Sts.
E
3d St. & Grand
Dul. Trans. Zone 8 Ave. W. to 4 Ave. E. on Sup. and 2nd Sts.
W
31st Ave.

IN BOUND
EMERGENCY
OUT BOUND



Mfd. by Cosby-Wirth Manifold Book Co., Minneapolis, Minn.

NOT TRANSFERABLE THE DULUTH STREET RAILWAY CO.-Transfer Ticket

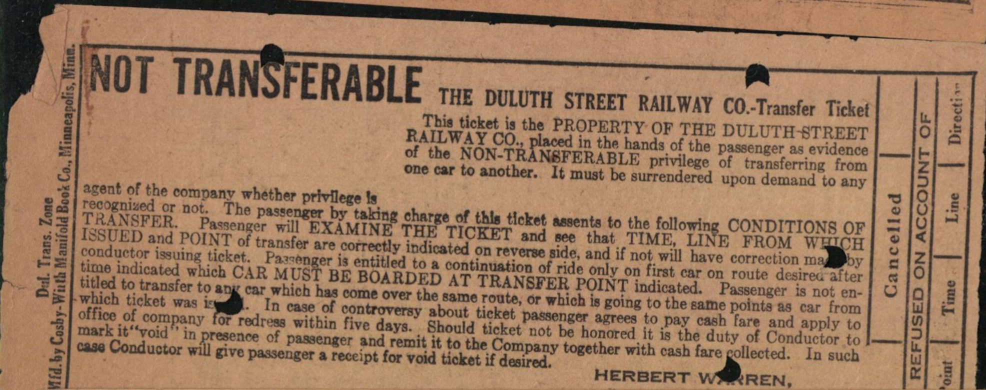
This ticket is the PROPERTY OF THE DULUTH STREET RAILWAY CO., placed in the hands of the passenger as evidence of the NON-TRANSFERABLE privilege of transferring from one car to another. It must be surrendered upon demand to any agent of the company whether privilege is recognized or not. The passenger by taking charge of this ticket assents to the following CONDITIONS OF TRANSFER. Passenger will EXAMINE THE TICKET and see that TIME, LINE FROM WHICH ISSUED and POINT of transfer are correctly indicated on reverse side, and if not will have correction made by conductor issuing ticket. Passenger is entitled to a continuation of ride only on first car on route desired after time indicated which CAR MUST BE BOARDED AT TRANSFER POINT indicated. Passenger is not entitled to transfer to any car which has come over the same route, or which is going to the same points as car from which ticket was issued. In case of controversy about ticket passenger agrees to pay cash fare and apply to office of company for redress within five days. Should ticket not be honored it is the duty of Conductor to mark it "void" in presence of passenger and remit it to the Company together with cash fare collected. In such case Conductor will give passenger a receipt for void ticket if desired.

OSCAR MITCHELL,
RECEIVER

Cancelled

REFUSED ON ACCOUNT OF

Point	Time	Line	Direction



Dul. Trans. Zone
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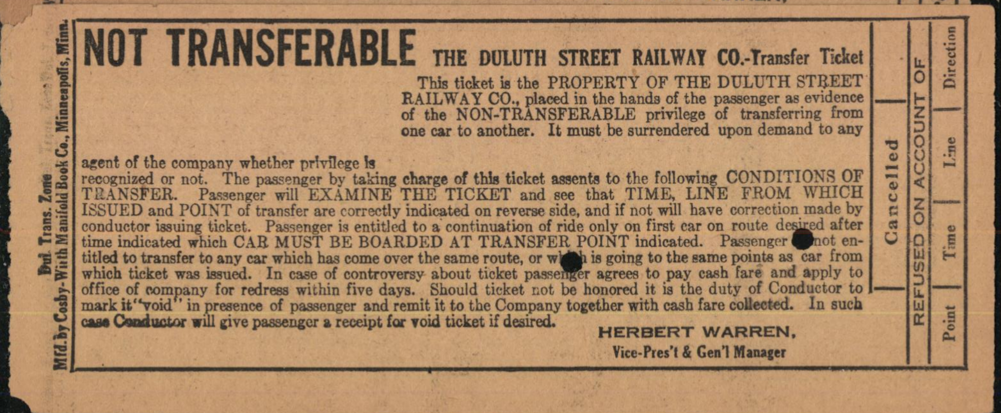
HERBERT WARREN,
Vice-Pres't & Gen'l Manager

Cancelled

REFUSED ON ACCOUNT OF

Point	Time	Line	Direction



Dul. Trans. Zone
Mfd. by Cosby-Wirth Manifold Book Co., Minneapolis, Minn.

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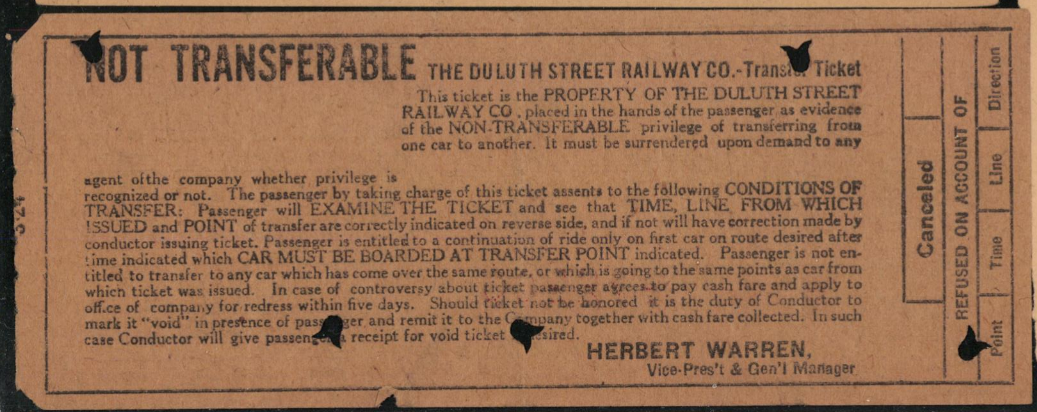
HERBERT WARREN,
Vice-Pres't & Gen'l Manager

Cancelled

REFUSED ON ACCOUNT OF

Point	Time	Line	Direction



3-24

NOT TRANSFERABLE THE DULUTH STREET RAILWAY CO.-Transfer Ticket

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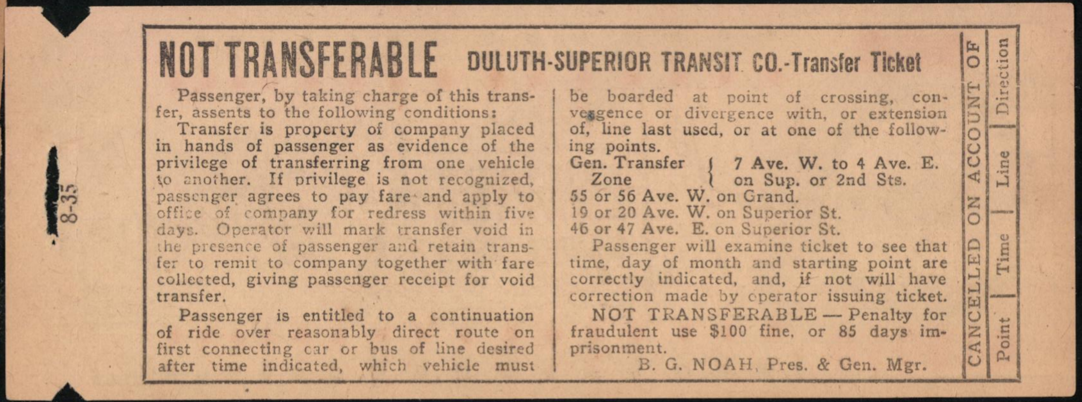
HERBERT WARREN,
Vice-Pres't & Gen'l Manager

Canceled

REFUSED ON ACCOUNT OF

Point	Time	Line	Direction



8-35

NOT TRANSFERABLE DULUTH-SUPERIOR TRANSIT CO.-Transfer Ticket

Passenger, by taking charge of this transfer, assents to the following conditions:

Transfer is property of company placed in hands of passenger as evidence of the privilege of transferring from one vehicle to another. If privilege is not recognized, passenger agrees to pay fare and apply to office of company for redress within five days. Operator will mark transfer void in the presence of passenger and retain transfer to remit to company together with fare collected, giving passenger receipt for void transfer.

Passenger is entitled to a continuation of ride over reasonably direct route on first connecting car or bus of line desired after time indicated, which vehicle must be boarded at point of crossing, convergence or divergence with, or extension of, line last used, or at one of the following points.

Gen. Transfer Zone { 7 Ave. W. to 4 Ave. E. on Sup. or 2nd Sts.
55 or 56 Ave. W. on Grand.
19 or 20 Ave. W. on Superior St.
46 or 47 Ave. E. on Superior St.

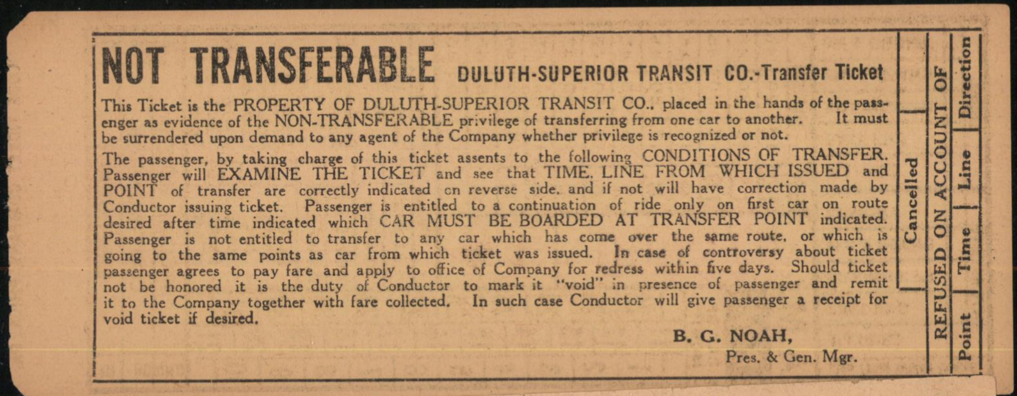
Passenger will examine ticket to see that time, day of month and starting point are correctly indicated, and, if not will have correction made by operator issuing ticket.

NOT TRANSFERABLE — Penalty for fraudulent use $100 fine, or 85 days imprisonment.

B. G. NOAH, Pres. & Gen. Mgr.

CANCELLED ON ACCOUNT OF

Point	Time	Line	Direction



NOT TRANSFERABLE DULUTH-SUPERIOR TRANSIT CO.-Transfer Ticket

This Ticket is the PROPERTY OF DULUTH-SUPERIOR TRANSIT CO., placed in the hands of the passenger as evidence of the NON-TRANSFERABLE privilege of transferring from one car to another. It must be surrendered upon demand to any agent of the Company whether privilege is recognized or not.

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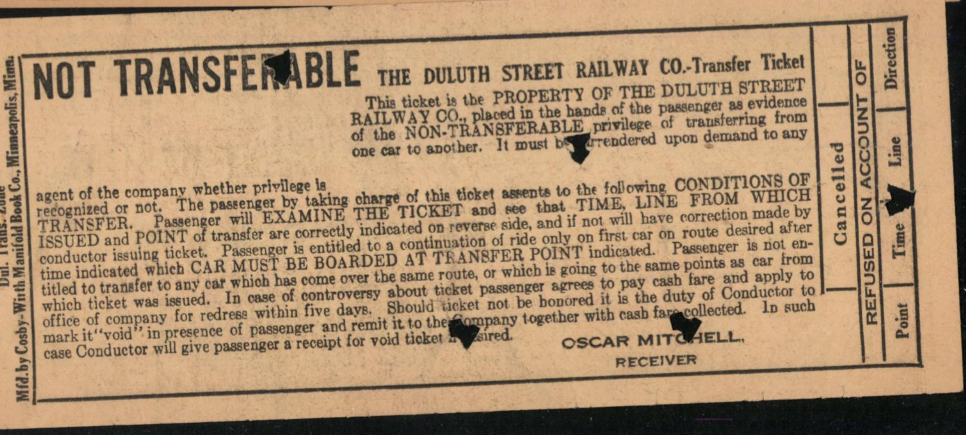
B. G. NOAH,
Pres. & Gen. Mgr.

Cancelled

REFUSED ON ACCOUNT OF

Point	Time	Line	Direction



Dul. Trans. Zone
Mfd. by Cosby-Wirth Manifold Book Co., Minneapolis, Minn.

NOT TRANSFERABLE THE DULUTH STREET RAILWAY CO.-Transfer Ticket

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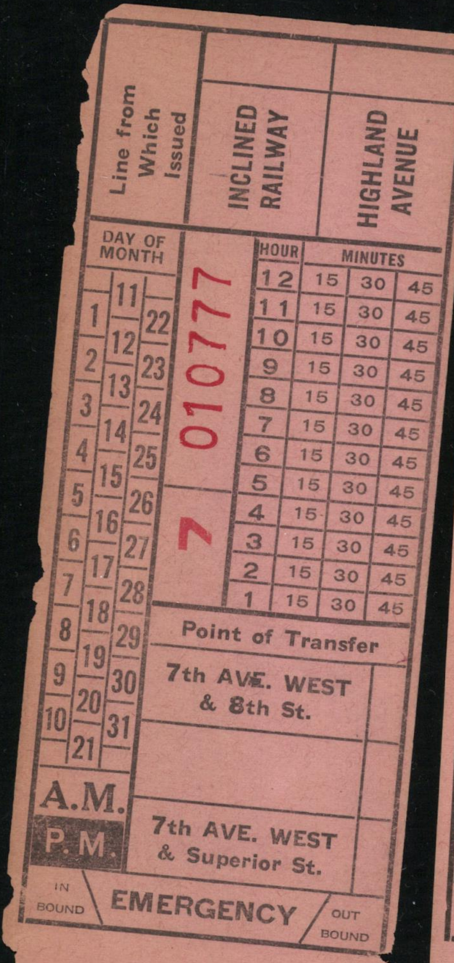
OSCAR MITCHELL,
RECEIVER

Cancelled

REFUSED ON ACCOUNT OF

Point	Time	Line	Direction



Line from Which Issued

INCLINED RAILWAY

HIGHLAND AVENUE

DAY OF MONTH

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

7 010777

HOUR	MINUTES		
12	15	30	45
11	15	30	45
10	15	30	45
9	15	30	45
8	15	30	45
7	15	30	45
6	15	30	45
5	15	30	45
4	15	30	45
3	15	30	45
2	15	30	45
1	15	30	45

Point of Transfer

7th AVE. WEST & 8th St.

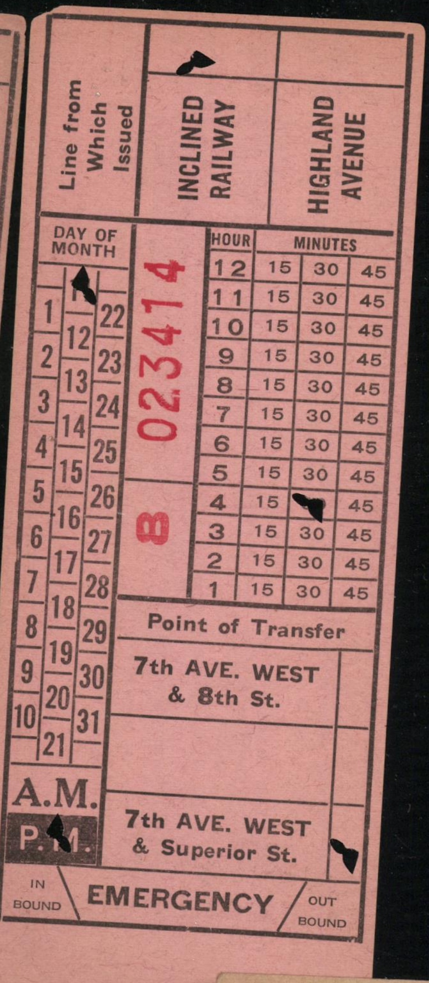
7th AVE. WEST & Superior St.

A.M.

P.M.

IN BOUND EMERGENCY OUT BOUND

GLOBE TICKET COMPANY, PHILA., PA.



Line from Which Issued

INCLINED RAILWAY

HIGHLAND AVENUE

DAY OF MONTH

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

8 023414

HOUR	MINUTES		
12	15	30	45
11	15	30	45
10	15	30	45
9	15	30	45
8	15	30	45
7	15	30	45
6	15	30	45
5	15	30	45
4	15	30	45
3	15	30	45
2	15	30	45
1	15	30	45

Point of Transfer

7th AVE. WEST & 8th St.

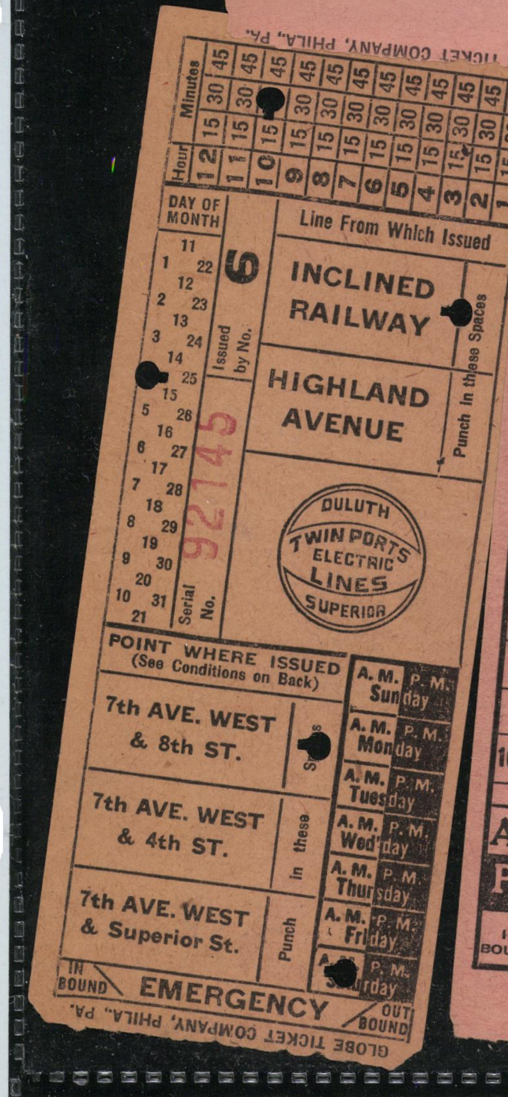
7th AVE. WEST & Superior St.

A.M.

P.M.

IN BOUND EMERGENCY OUT BOUND

COMPANY, PHILA., PA.



Hour	Minutes		
12	15	30	45
11	15	30	45
10	15	30	45
9	15	30	45
8	15	30	45
7	15	30	45
6	15	30	45
5	15	30	45
4	15	30	45
3	15	30	45
2	15	30	45
1	15	30	45

DAY OF MONTH

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

6 Issued by No.

Serial No. 92145

Line From Which Issued

INCLINED RAILWAY

HIGHLAND AVENUE

Punch in these Spaces

DULUTH TWIN PORTS ELECTRIC LINES SUPERIOR

POINT WHERE ISSUED (See Conditions on Back)

7th AVE. WEST & 8th ST.

7th AVE. WEST & 4th ST.

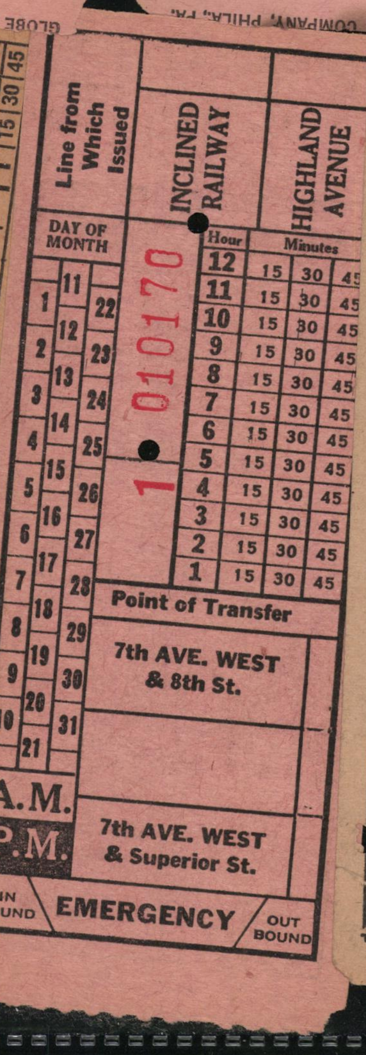
7th AVE. WEST & Superior St.

Punch in these Spaces

A.M. Sunday	P.M.
A.M. Monday	P.M.
A.M. Tuesday	P.M.
A.M. Wednesday	P.M.
A.M. Thursday	P.M.
A.M. Friday	P.M.
A.M. Saturday	P.M.

IN BOUND EMERGENCY OUT BOUND

GLOBE TICKET COMPANY, PHILA., PA.



Line from Which Issued

INCLINED RAILWAY

HIGHLAND AVENUE

DAY OF MONTH

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

1 010170

Hour	Minutes		
12	15	30	45
11	15	30	45
10	15	30	45
9	15	30	45
8	15	30	45
7	15	30	45
6	15	30	45
5	15	30	45
4	15	30	45
3	15	30	45
2	15	30	45
1	15	30	45

Point of Transfer

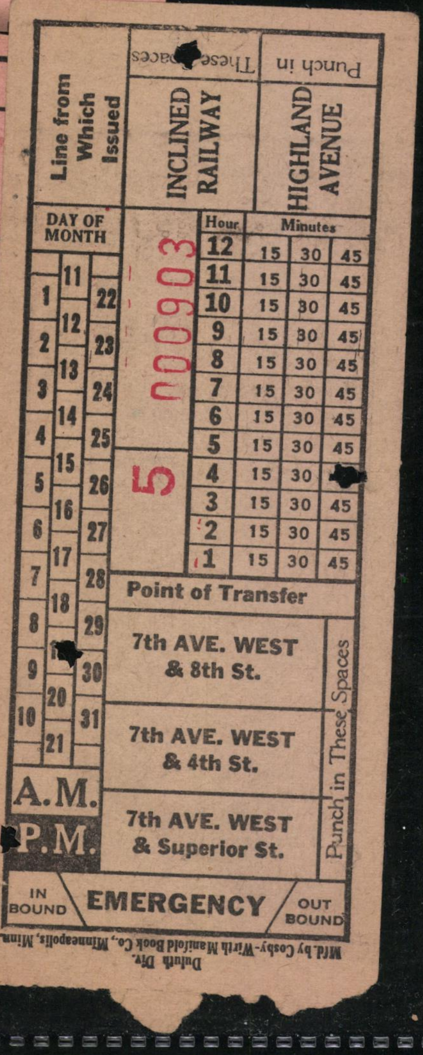
7th AVE. WEST & 8th St.

7th AVE. WEST & Superior St.

A.M.

P.M.

IN BOUND EMERGENCY OUT BOUND



Punch in These Spaces

Line from Which Issued

INCLINED RAILWAY

HIGHLAND AVENUE

DAY OF MONTH

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

5 000903

Hour	Minutes		
12	15	30	45
11	15	30	45
10	15	30	45
9	15	30	45
8	15	30	45
7	15	30	45
6	15	30	45
5	15	30	45
4	15	30	45
3	15	30	45
2	15	30	45
1	15	30	45

Point of Transfer

7th AVE. WEST & 8th St.

7th AVE. WEST & 4th St.

7th AVE. WEST & Superior St.

Punch in These Spaces

A.M.

P.M.

IN BOUND EMERGENCY OUT BOUND

Duluth Div.
Mfd. by Cosby-Wirth Manifold Book Co., Minneapolis, Minn.

NOT TRANSFERABLE THE DULUTH STREET RAILWAY CO.-Transfer Ticket

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HERBERT WARREN,
Vice Pres't & Gen'l Manager

Cancelled
REFUSED ON ACCOUNT OF
Point | Time | Line | Direction

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OSCAR MITCHELL,
Receiver

Mfd. by Cosby-Wirth Manifold Book Co., Minneapolis, Minn.
Duluth Div.

Cancelled
REFUSED ON ACCOUNT OF
Point | Time | Line | Direction

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OSCAR MITCHELL,
Receiver

45

Cancelled
REFUSED ON ACCOUNT OF
Point | Time | Line | Direction

NOT TRANSFERABLE DULUTH-SUPERIOR TRANSIT CO.-Transfer Ticket

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B. G. NOAH,
Pres. & Gen. Mgr.

Cancelled
REFUSED ON ACCOUNT OF
Point | Time | Line | Direction

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B. G. NOAH,
Pres. & Gen. Mgr.

Cancelled
REFUSED ON ACCOUNT OF
Point | Time | Line | Direction

OPERATIONS

LINE ROUTINGS

DULUTH

1890-1897

WEST DULUTH & EAST END from 62nd Ave. W. and Raleigh St. to 22nd Ave. E. and Superior St.
LAKESIDE from 5th Ave. W. and Superior St. on Superior St. and Lakeside Ry. track to 60th Ave. E. and Superior St.
EAST 4th ST. from 5th Ave. W. and Superior St. to E. 4th St. and 14th Ave. E.
WOODLAND from 5th Ave. W. and Superior St. to E. 4th St. and Motor Line Improvement Co. track to Woodland. During the summer of 1893 and May 1-19, 1894, eastbound cars operated over Superior St. to 12th Ave. E. and on 12th Ave. E. to E. 4th St. in order to provide and easier grade for motor cars pulling trailers.
WEST 4th ST. from 5th Ave. W. and Superior St. to W. 4th St. and 5th Ave. W. As of December 4th, 1894, the cars were turning around at 3rd Ave. W. and Superior St.
LAKE & GARFIELD operating on Lake Ave., Superior St. and Garfield Ave. In 1894 mention is made of the GARFIELD & WEST SUPERIOR line.

The new W. 3rd ST. line which opened July 1,1896, was operated in conjunction with the LAKESIDE line.

With the opening of the Duluth-Superior Bridge to streetcar traffic September 1,1897, a realignment of certain lines went into effect.
WEST DULUTH & LAKE AVE.
INTERSTATE replaced GARFIELD AVE. and the EAST END part of the WEST DULUTH & EAST END line. INTERSTATE line cars were run to 22nd Ave. E. and Superior St.
WOODLAND operated via E. 4th St., W. 3rd St. to 40th Ave. W.
LAKESIDE cut back to 5th Ave. W. and Superior St.

March 1900

Line	Cars Required		Headway-Minutes	
	Base	Maximum	Base	Maximum
W. DULUTH & LAKE AVE.	6	15	15	3 3/4
WOODLAND & W. 3rd ST.	4	4	30	30
LAKESIDE	2	6	40	10 and 20
WEST 4th ST.	1	1	30	30
EAST 4th ST.	1	2	30	10 and 20
HIGHLAND	1	1	30	30
INTERSTATE	12	12	10	10

The INTERSTATE line operated from 22nd Ave. E. and Superior St. in Duluth to 21st St. and Tower Ave. in Superior. DSR provided eight cars and SRTR four cars. Each company received the fares collected on its own track and the excess of car miles operated by either company over the other's track was paid for by the other at a rate of 4 3/4 cents per mile. This arrangement was slightly to the advantage of SRTR.

1900-1907

With the completion of the Aerial Bridge in 1905, the WEST DULUTH & LAKE AVE. line was renamed the WEST DULUTH & AERIAL BRIDGE line.

When track on W. 3rd St. was extended to 60th Ave. W. and Grand Ave. in August 1903 the EAST FOURTH AND WEST THIRD line was established, the cars running eastbound to E. 4th St. and 25th Ave. E. There also was a reference to a LAKE AVE. & W. 3rd ST. line May 31, 1905.

Beginning March 16,1905, double-truck cars were placed on the WOODLAND line, running from 8th Ave. W. and Superior St. to the St.Paul Ave. (Hunter's Park) wye every 30 minutes. A single-truck shuttle car was operated from the wye to the end of the line at Austin St. However complaints about this transfer arrangement led to through service with double-truck cars beginning August 27, 1905.

With completion of double track on 24th Ave. E. between Superior St. and E. 4th St. on July 22, 1907, WOODLAND cars began operating over Superior St. between 3rd Ave.W. and 24th Ave. E. instead of E. 4th St. EAST END and WEST DULUTH & EAST END cars began turning back here, running directly onto 24th Ave. E., then backing out onto Superior St.. Previously the cars had backed into a stub wye at this same location.

In April 1907 it was announced that the wye at 8th Ave.W. and Superior St. would be replaced by a loop on which all EAST END, LAKESIDE, HUNTER'S PARK, EAST 4th ST., and WEST 4th ST. cars would turn around. On August 15, 1907, it was announced that the main transfer point at 5th Ave. W. and Superior St. would be changed the following week to 3rd Ave.W. and Superior St.

1909-1926

During this time period the system grew to its fullest extent. Continually changing traffic patterns also affected the line routings. DSR, of necessity, was very flexible in scheduling and routing so it is not possible to record all the changes that were effected. Neither does it seem possible to briefly and simply relate such a complicated subject. The following discussions provide certain basic information for selected points in time that represent the more interesting aspects of the operation. Terminology as to certain geographical locations is explained now.

Hunter's Park: wye at Woodland Ave. at St.Paul Ave.
West Duluth: 62nd Ave. W. and Raleigh St.
West End: 26th Ave. W. and Superior St. until 1916; thereafter 32nd Ave. W. and Superior St.
East End: 24th Ave. E. and Superior St.
Aerial Bridge: Lake Ave. at Morse St.
Lester Park: the LAKESIDE line designation was changed in 1915.

The INTERSTATE line in Duluth normally ran to 24th Ave. E. and Superior St. during the winter months. During the navigation season cars operated only to 3rd Ave. E. and Superior St. in order to minimize interruptions to service brought about by frequent openings of the Duluth-Superior Bridge. Effective February 21, 1919, cars began running to 3rd Ave. E. and Superior St. normally except during rush hours (6 to 8 a.m. and 5 to 7 p.m.) when runs were extended to 24th Ave. E. and Superior St. When the Crosley Ave. track was completed in October 1926, cars began running through to the end of this line. The Armory Loop was built in August 1927 and cars began turning around there instead.

The E. 4th ST. & W. 3rd ST. line ran from E. 4th St. and 24th Ave. E. to 71st Ave. W. and Grand Ave. (Fairmount Park), and to 57th Ave. W. and Medina St. Short line service was operated from E. 4th St. and 24th Ave. E. to 39th Ave. W. and W.3rd St. (Grand Ave.). As of November 1, 1915, two additional routings were operated: (1) 3rd Ave. E. and Superior St. to 39th Ave. W. and W. 3rd St., and (2) 71st Ave. W. and Grand Ave. to Lakeside (61st Ave. E. and Superior St.). In February 1916 another routing was added: 3rd Ave. E. and Superior St. to 57th Ave. W. and Grand Ave. In June 1916 the line was extended westward to Morgan Park, and again, in January 1918, to Gary-New Duluth. Cars also then ran from E. 4th St. and 24th Ave. E. to 92nd Ave. W. and Grand Ave., Morgan Park, and Gary-New Duluth. There are indications that additional variations were: (1) 3rd Ave. E. and Superior St. to 92nd Ave. W. and Grand Ave. (1919), and (2) 57th Ave. W. and Grand Ave. to New Duluth (January 1920).

The "Main Line", as DSR internal reports referred to it, was operated with a variety of long line and short line route combinations in order to meet traffic demands. About 1910 these combinations were in use.
  West Duluth to Aerial Bridge
  West Duluth to East End
  West Duluth to 3rd Ave. E.
  West Duluth to Woodland
  West Duluth to Lakeside
  East End to West End
  8th Ave. W. and Superior St. to East End
  8th Ave. W. and Superior St. to Hunter's Park and Woodland
  8th Ave. W. and Superior St. to Lakeside
By November 1, 1915, the following combinations were added.
  8th Ave. W. and Superior St. to Aerial Bridge
  West End to 3rd Ave. E. and Superior St.
  West End to Lakeside (Lester Park)
In 1919 these two additional combinations were noted.
  Hunter's Park to West End
  West End to 45th Ave. E. and Superior St.

The WEST 4th ST. line originally operated from 12th Ave. W. and Michigan St. When track on Piedmont Ave. was completed in 1910 the W. FOURTH & PIEDMONT line was established.

The EAST 9th ST. line opened in 1912 and was operated from 8th Ave. W. and Superior St.

The KENWOOD AVE. line also operated from 8th Ave. W. and Superior St. when it was opened in 1917.

Effective December 4, 1918, the PIEDMONT-KENWOOD line was established and the WEST 4th ST. line began operating from 8th Ave. W. and Superior St. Apparently this combination did not work out too well for by February 1919 DSR was back to operating the KENWOOD AVE. and PIEDMONT & W. 4th lines. During the summer of 1919 the situation changed once more: (1) the W.4th ST. line became a shuttle operation on W. 4th St. from 5th Ave. E. to 5th Ave. W.; (2) KENWOOD AVE. line was operated from 8th Ave. W. and Superior St.; and (3) the PIEDMONT & EAST 9th ST. line was established, with some runs operated as PIEDMONT-KENWOOD.

The Park Point Traction Co. was acquired in 1917 and this line was then operated as DSR's PARK POINT line. The July 14, 1921, issue of the Duluth newspaper reported that DSR had installed temporary track and trolley wire on the Aerial Bridge ferry car and transported two large double-truck cars of the 151-162 series across the bridge to Park Point. The previous Sunday 10,800 passengers had been carried over the line, the largest crowd ever. So DSR decided to furnish 10 minute service over the line which required more equipment than was available (four double-truck cars and three Birney cars). The two large cars were operated back-to-back as one train, special couplings and air brake connections having been made for this purpose as there were no wyes for turning cars. The crew consisted of one motorman and two conductors, one conductor on each car.

An extension of the East 9th St. trackage to and on East 8th St. was opened in 1923.

1927-1930

As passenger traffic changes occurred more frequently due to increased use of the automobile more variations in route combinations were tried after 1926. These are now described in some detail.

A DSR informational poster, undated but apparently from the 1927-1928 period, listed the lines and the method of operation which is very interesting.

9:00 a.m. to noon	noon to 4:00 p.m.	7:00 to 10:00 p.m.
Eastbound:		
Lester Park-New Duluth	Lester Park-New Duluth	Woodland-New Duluth
Crosley-57th Ave.W.	Crosley-57th Ave.W.	E.4th St.-57th Ave.W.
Woodland-8th Ave.W.&Superior St.	Woodland-Fairmount Park	Lester Park-8th Ave.W & Superior St.
E.4th St.-8th Ave.W.&Superior St.	E.4th St.-39th Ave.W.	---
West Duluth-E. 4th St.	West Duluth-E. 4th St.	West Duluth-Crosley Ave.
Piedmont-Kenwood	Piedmont-Kenwood	Piedmont-Kenwood
E.8th St.-8th Ave.W.&Superior St.	E.8th St.-8th Ave.W. & Superior St.	E.8th St.-8th Ave.W. & Superior St.
Westbound:		
Lester Park-New Duluth	Lester Park-New Duluth	Lester Park-New Duluth
Crosley-57th Ave.W.	Crosley-57th Ave.W.	Crosley-57th Ave.W.
Woodland-8th Ave.W.&Superior St.	Woodland-Fairmount Park	Woodland-8th Ave.W. & Superior St.
E.4th St.-8th Ave.W.&Superior St.	E.4th St.-39th Ave.W.	---
West Dululth-E. 4th St.	West Duluth-E. 4th St.	West Duluth-E. 4th St.
Piedmont-E. 8th St.	Piedmont-E. 8th St.	Piedmont-E. 8th St.
Kenwood-8th Ave.W.&Superior St.	Kenwood-8th Ave.W. & Superior St.	Kenwood-8th Ave.W. & Superior St.

An April 1928 list, however, does include the WEST DULUTH-AERIAL BRIDGE line.

Effective June 16, 1929, the following changes were to go into effect: E. 8th ST.-57th AVE. W., and PIEDMONT-EAST 4th ST.

The routes operated and service provided as of September 1929 were as follows.

INTERSTATE: from Armory Loop, Duluth, to and from 21st St. and Grand Ave. or 63rd St. and Tower Ave., Superior. Twenty-minute base service required nine cars with ten-minute rush hour service requiring four additional cars.

WEST 4th ST.: shuttle operation between 5th Ave. E. and 5th Ave. W. One car provided twenty-minute service.

KENWOOD AVE.: to and from 8th Ave. W. and Superior St. Twenty-minute service provided throughout the day using three cars with one car added in the afternoon rush hour.

PIEDMONT & EAST 4th ST.: from E. 4th St. and 24th Ave. E. to and from 8th Ave. W. and Superior St. or Piedmont Ave. and 10th St. Ten-minute base service was provided on E. 4th St. to 8th Ave. W. while twenty-minute service was provided on the Piedmont Ave. segment. All of this service required six cars. During the morning rush hour ten-minute service was provided over the entire line. This was also the situation during the evening rush hour except that 7½ minute service was provided on E. 4th St. to 8th Ave. W. This rush hour service required one additional car in the morning and two additonal cars in the evening.

PARK POINT: Aerial Bridge to 43rd St. and Minnesota Ave. Twenty-minute service provided all day using two cars.

HIGHLAND AVE.: thirty-minute base service was provided using one car. During the morning and evening rush hours one car was added to provide fifteen-minute service.

INCLINE RAILWAY: the two cars provided fifteen-minute service all day.

WEST DULUTH-AERIAL BRIDGE: Aerial Bridge to and from 32nd Ave. W. and Superior St. or 62nd Ave. W. and Raleigh St. Twenty-minute base service was provided over the full length of the line using four cars. In rush hours ten-minute service was provided requiring four additional cars in the morning and five additional cars in the evening.

MAIN LINE: Lester Park, Crosley Ave., Woodland (via 24th Ave. E. and Superior St., and East 8th St., to and from 57th Ave. W. and Medina St., and New Duluth, with some cars turning back at 8th Ave. W. and Superior St., 71st Ave. W. and Grand Ave., and Morgan Park. Twenty-minute base service was provided on all segments of the line requiring 23 cars. During morning and evening rush hours 7½ minute service was provided on East 8th St.; ten-minute service on Lester Park, Crosley Ave., and Woodland; ten-minute service to 71st Ave. W. and Grand Ave.; and twenty-minute service to New Duluth and 57th Ave. W. and Medina St. This rush hour service required 19 additional cars in the morning and 32 additional cars in the evening.

The Aerial Bridge was rebuilt to a lift-type structure beginning in the fall of 1929. DSR laid double track over the new lift span and the first test car ran over the bridge February 8, 1930. The PARK POINT line was extended over the bridge on Lake Ave. and Superior St. to 8th Ave. W. effective March 12, 1930. DSR had wanted to use its standard cars on the line but the cost of land on which to build a loop at 43rd St. and Minnesota Ave., plus the poor condition of the track, prevented this. The four ex-Park Point Traction Co. double-truck cars were modified for through-route service and re-assigned to the DSR carhouse at 26th Ave. W. and Superior St. The carhouse at Park Point was removed from service.

As a result of through operation of the PARK POINT line, the KENWOOD-WEST DULUTH line was established. A PIEDMONT-PARK POINT line was then tried but the Park Point cars (285-288) would not perform satisfactorily on the steep Piedmont Ave. grades so the plan was dropped after two days of disrupted operation. PARK POINT cars thereafter operated only to 8th Ave. W. and Superior St.

A November 1930 listing indicated that two changes had been effected: WEST DULUTH-EAST 4th ST. line and PIEDMONT TO KENWOOD AND LAKE AVE. line.

1930-1939

The WEST 4th ST. line was abandoned in 1930 and the PARK POINT line in 1931. Also in 1931 that segment of the LESTER PARK line on Superior St. from 45th Ave. E. to 61st Ave. E. was abandoned.

Another company informational poster, also undated, apparently pertains to operations after the foregoing abandonments.

9:00 a.m. to noon	noon to 4:00 p.m.	7:00 to 10:00 p.m.
Westbound:		
Woodland-New Duluth	45th Ave.E. & Superior St. to New Duluth	Woodland-New Duluth
Crosley-57th Ave.W.	Woodland-57th Ave. W. and Crosley-71st Ave.W.& Grand Ave.	Crosley-57th Ave. W
Kenwood-West Duluth	Kenwood-West Duluth	Kenwood-West Duluth
East 8th St. to 8th Ave.W. and Superior St.	East 8th St. to 32nd Ave. W. and Superior St.	East 8th St. to 8th Ave.W. and Superior St.
Piedmont-East 4th St.	Piedmont-East 4th St.	Piedmont-East 4th St.
East 4th St. to 8th Ave.W. and Superior St.	East 4th St. to 8th Ave.W. and Superior St.	---

Eastbound:

Woodland-New Duluth	Woodland-New Duluth	Woodland-New Duluth
Crosley-57th Ave. W.	Crosley-57th Ave. W.	Crosley-57th Ave. W.
	45th Ave. E. & Superior St. to 71st Ave.W. & Grand Ave.	
West Duluth-East 8th St.	West Duluth-East 8th St.	West Duluth-East 8th St.
Kenwood to 8th Ave. W. and Superior St.	Kenwood to 8th Ave. W. and Superior St.	Piedmont-Kenwood
East 4th St. to 8th Ave.W. and Superior St.	East 4th St. to 8th Ave.W. and Superior St.	East 4th St. to 8th Ave.W. and Superior St.
Piedmont-East 4th St.	Piedmont-East 4th St.	---

The March 1933 newspaper reported that the track on Lake Ave. had been in use only for rush hour service since the PARK POINT line had been abandoned June 15, 1931.

In May 1934 the PIEDMONT AVE. line was abandoned, replaced by the Lester Park-Piedmont trolley bus, which also replaced streetcar service on Superior St. between 3rd Ave. E. and 24th Ave. E. resulting in abandonment of that track also.

Because of the unimproved streets on the CROSLEY AVE. branch line, streetcars had to be retained. An EAST 4th ST.-CROSLEY line had been tried after abandonment of the Superior St. trackage but did not work out satisfactorily. So service was changed to a double-end shuttle car operation from 45th Ave. E. and Superior St. to the end of the line at 52nd Ave. E. and Crosley Ave. Thus the trackage on Superior St. from 24th Ave. E. to 45th Ave. E. was used only for access to the carhouse.

On November 12, 1936, the loop utilizing new track construction on 2nd Ave. E. was opened with the resulting changes. WOODLAND, EAST 4th ST., and EAST 8th ST. cars turned north to 2nd St. at 2nd Ave. E. NEW DULUTH, 71st Ave. W. and Grand Ave., and 57th AVE. W. cars turned south to Superior St. at 2nd Ave. E. WEST DULUTH cars continued to use the existing route on 3rd Ave. W. Cars that formerly wyed at 3rd Ave. E. now looped via Superior St.--3rd Ave. W.--2nd St.--2nd Ave. E.--Superior St.

Effective May 2,1939, all owl service was provided by buses, streetcars were operated on EAST 8th ST. in rush hours only (buses otherwise), and the 57th AVE. W. branch line was abandoned.

LINE ROUTINGS

SUPERIOR

Information is lacking on the early Superior routes. All we have is a list of lines that were operating during 1892: MAIN ST.-TOWER AVE.-SOUTH SUPERIOR, EAST END, 21st ST. or STEEL PLANT, and BROADWAY.

March 1900

Line and Route	Cars Required	Headway-Minutes
EAST END from Belknap St. and Tower Ave. on Belknap St., 7th St., L Ave., and 5th St. to Newton Ave.	3	15
SOUTH SUPERIOR from Tower Ave. and Belknap St. on Tower Ave. to 64th St. Alternate cars ran east on Central Ave. to Hammond Ave.	2	30
TOWER AVE. from Tower Ave. and Belknap St. on Tower Ave., 6th St., Lamborn Ave., 3rd St., and Tower Ave. to Belknap St. Connections were made with EAST END line cars.	2	15
STEEL PLANT from 21st St. and Tower Ave. on 21st St. to New York Ave.	1	20
BROADWAY from Broadway and Tower Ave. on Broadway, Catlin Ave., Belknap St., 7th St., L Ave., and 5th St. to Robertson Ave.	1	60

Rush hour service consisted of one additional car on the STEEL PLANT line for two hours each morning and evening, and two extra trips in the morning and one extra trip in the evening on the EAST END line.

About 1909-1910

BILLINGS PARK line: from the 3rd St.-Ogden Ave. loop via Tower Ave. and 21st St. to Billings Park.

EAST END-ALLOUEZ line. The EAST END line ran from the 3rd St.-Ogden Ave. loop via Tower Ave. and Belknap St. to 4th St. and Robertson Ave. The ALLOUEZ line ran from 4th St. and Robertson Ave. to 2nd St. and McBain Ave. with some runs operating through to the 3rd St.-Ogden Ave. loop.

SOUTH SUPERIOR line: from the 6th St. loop (layover was taken at 3rd St. and Grand Ave.) via 3rd St. and Tower Ave. on Tower Ave. to 63rd St.

INTERSTATE line: from Duluth via the Duluth-Superior Bridge, Main St., 3rd St., and Tower Ave. on Tower Ave. to 21st St.

Regular service had been operated separately from the 3rd St.-Ogden Ave. loop on Tower Ave. to 28th St. but this was discontinued June 1, 1911, and service on the SOUTH SUPERIOR line increased.

1915-1925

By February 1915 the EAST END-ALLOUEZ line had been re-routed around the 6th St. loop.

Upon completion of the re-established Broadway line trackage during 1917, the BILLINGS PARK-BROADWAY line resulted.

Track was built on 21st St. from Tower Ave. eastward to Grand Ave. in 1922. The INTERSTATE line was then extended over this new track.

In April 1925 when the new lightweight cars were received, the original plan for their operation called for the following.

1. The INTERSTATE line to operate ten-minute service on the EAST END line to Robertson Ave. and twenty-minutes service on the ALLOUEZ line to 2nd St. and McBain Ave.
2. Three lightweight cars on the SOUTH SUPERIOR line operating around the 6th St. loop.
3. One lightweight car on the 21st STREET line, operating from 21st St. and Grand Ave. to Tower Ave. and Belknap St., wyeing at Tower and Belknap.
4. BILLINGS PARK-BROADWAY to operate with rebuilt one-man cars.
4. One lightweight car in reserve as a spare.

The INTERSTATE line routing over the EAST END-ALLOUEZ was due to public pressure and did not work out satisfactorily, beginning April 19, 1925, and being discontinued July 1, 1925. In 1926 the INTERSTATE line was operating from (1) Crosley Ave. and 52nd Ave. E. in Duluth to 21st St. and Grand Ave. in Superior, and (2) from 24th Ave. E. and Superior St. in Duluth to 63rd St. and Tower Ave. in Superior.

1927

BILLINGS PARK-BROADWAY line: Billings Park-21st St.-Tower Ave.-Broadway-to Hill Ave. and Belknap St. where the cars wyed. Twenty-minute service was provided using three rebuilt one-man cars. One car was added in the evening rush hour.

INTERSTATE line: same operation as described in 1926.

EAST END line: 3rd St.-Ogden Ave. loop via Tower Ave. and Belknap St. to 4th St. and Robertson Ave. Twenty-minute base service was provided using three rebuilt one-man cars.

ALLOUEZ line: from the 6th St. loop (layover taken at 3rd St. and Grand Ave.) via Tower Ave. and Belknap St. to 2nd St. and McBain Ave. Twenty-minute base service was provided using four lightweight cars.

1929-1932

By September 1929 the EAST END and ALLOUEZ lines had been combined into one line. Twenty-minute service was provided using four lightweight cars. Ten-minute morning and evening rush hour service was provided for which three additional cars, rebuilt one-man cars, were required.

On May 15, 1930, one-man cars replaced two-man cars on the INTERSTATE line. Cars alternated between 21st St.-Grand Ave. and South Superior on trips from Duluth. For example, a car would operated from Duluth over the Duluth-Superior Bridge, Main St., 3rd St., Tower Ave., and 21st St. to 21st and Grand Ave., then back to and around the 3rd St.-Ogden Ave. loop, down Tower Ave. to South Superior, then return to Duluth.

Again bowing to public pressure, the INTERSTATE line was routed over the EAST END-ALLOUEZ line from December 1, 1931, until May 1, 1932. The round trip time was too tight to provide satisfactory service during the navigation season because of the opening and closing frequency of the Duluth-Superior Bridge.

THE DULUTH STREET RAILWAY COMPANY

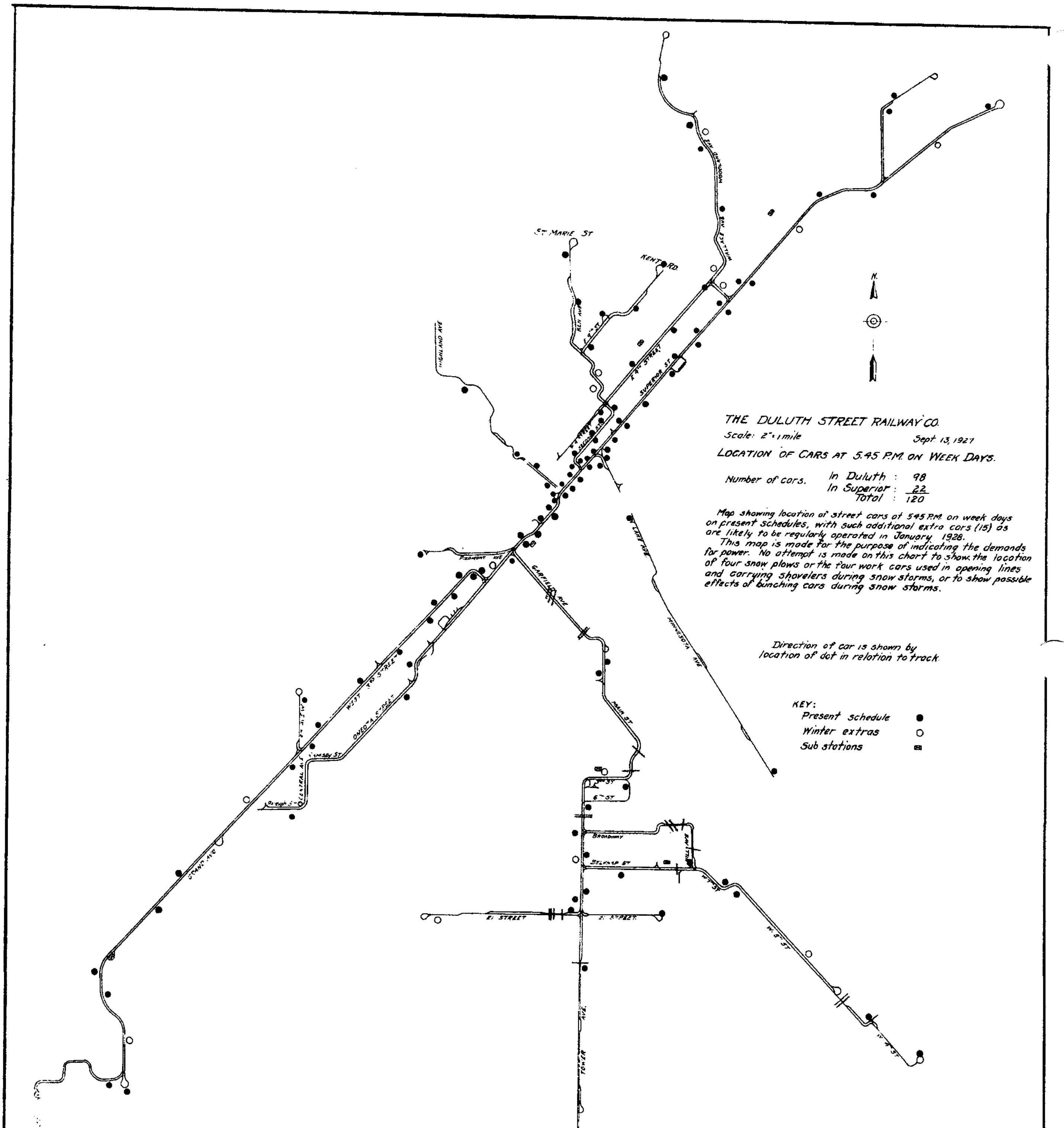
Routing, Headway, Speed and Number of Cars Scheduled.

No. (See Map)	Name of Line	Base Head-way	No. Cars Basic Schedule	Rush Hour Headways			Additional Cars - Rush Hours						Length of Line (Round trip miles)	Schedule Speed Miles Per Hour		Duration of Layover	Running Time (Mins. Round trip Midday - Excl. Layover)
							A.M.		Midday		P.M.						
				A.M.	Mid-day	P.M.	Summer	Winter	Summer	Winter	Summer	Winter		With Layover	Without Layover		
	Main Lines																
1	Lester Park	20	23	10	20	10	19	29	6	6	32	36	12.30*	10.98	12.72#	9#	58
2	Crosley Ave.	20		10	20	10							12.48	11.52	12.90	7	58
3	Woodland	20		10	20	10							11.64	10.74	11.64	5	60
4	East 8th St.	20		10	20	7½							5.78	7.50	8.88	7	39
	to -																
5	New Duluth	20		20	20	20							24.69	12.42	13.68	11	108
6	57W. & Medina St.	20		20	20	20							10.86	8.22	11.40	22	57
7	71st W. & Grand	-		10	10	10							12.05	10.50	12.05	9½	60
8	Aerial Bridge	20	4	10	10	10	4	4	4	4	5	5					
9	to 32nd Ave. W.	-		10	10	10							6.83	8.16	10.74	4-8	38
10	& West Duluth	20		10	20	10							12.71	10.86	11.88	6	64
	Hill Lines																
11-12	Kenwood to 8W.	20	3	20	20	20	0	0	0	0	1	1	7.24	7.24	10.08	9-8	43
13-12	East 4th St. to 8W	10	6	10	10	7½	1	2	0	0	2	3	6.30	7.56	9.90	8-4	38
14	& Piedmont Ave.	20		10	20	10							9.69	8.28	9.69	6-4	60
15-16	W4th (5E. to 5W.)	20	1	20	20	20	0	0	0	0	0	0	1.87	5.61	8.20	4½	11
17	Incline	15	2	15	15	15	0	0	0	0	0	0	1.12	4.44	8.40	7	8
18	Highland	30	1	15	30	15	1	1	0	0	1	1	3.72	7.44	11.70	10-1	19
19	Park Point	20	2	20	20	20	0	0	0	0	0	0	6.61	9.90	11.64	3-3	34
	Interstate																
20-21	Armory Loop to S.Sup.	20	9	10	20	10	4	4	0	0	4	4	22.91	10.56	12.00	10-6	114
22	" " 21st & Gd												17.99	9.72	12.00	10-10	90
23-24	Billings Pk. & Bdw.	20	3	20	20	20	0	0	0	0	0	1	8.96	8.96	11.16	8-4	48
25-26 27	Allouez, E. End to 6th St. Loop	20	4	10	10	10	3	4	3	3	3	6	12.56	9.42	11.50	14	66
	Total -		58				32	44	13	13	48	57		9.56-(1st 8 Mos. 1929)			

* As the lines under "Main Lines" are all operated together by through-routing, distance and speed on each is figured to 3rd Ave. West, the business center.

Under winter conditions more running time is allowed and less layover is left.

RBT-9/18/29.
PO.


ST MARIE ST
KENT RD.
HIGHLAND AVE
WOODLAND AVE
WALLACE AVE
E 9TH ST
KEN AVE
E 4TH STREET
SUPERIOR ST
E 4TH STREET
SECOND ST
LAKE AVE
MINNESOTA AVE
PIEDMONT AVE
GARFIELD AVE
WEST 3RD STREET
ONEOTA STREET
RAMSEY ST
CENTRAL AVE
RALEIGH ST
GRAND AVE
MAIN ST
3RD ST
6TH ST
BROADWAY
BELKNAP ST
BAY ST
OGDEN AVE
21 STREET
21 STREET
W 7TH ST
W 5TH ST
W 4TH ST
TOWER AVE.

THE DULUTH STREET RAILWAY CO.

Scale: 2" = 1 mile

Sept. 13, 1927

LOCATION OF CARS AT 5.45 P.M. ON WEEK DAYS.

Number of cars.		
	In Duluth :	98
	In Superior :	22
	Total :	120

Map showing location of street cars at 5.45 P.M. on week days on present schedules, with such additional extra cars (15) as are likely to be regularly operated in January 1928.

This map is made for the purpose of indicating the demands for power. No attempt is made on this chart to show the location of four snow plows or the four work cars used in opening lines and carrying shovelers during snow storms, or to show possible effects of bunching cars during snow storms.

Direction of car is shown by location of dot in relation to track.

KEY:

Present schedule	●
Winter extras	○
Sub stations	▨

I.309

CAR REQUIREMENTS
SEPTEMBER 1929

Duluth base service:	
Main Line	23 cars
West Duluth-Aerial Bridge	4 cars
Interstate	9 cars
Kenwood Ave.	3 cars
Piedmont-East 4th St.	6 cars
West 4th St.	1 car
Highland Ave.	1 car
Park Point	2 cars
	49 cars
Superior base service:	
Billings Park-Broadway	3 cars
East End-Allouez	4 cars
	7 cars
Total base service	56 cars plus incline railway 2 cars.

During the winter months "winter extras" were added to morning and evening rush hour service on certain lines in order to maintain scheduled service in the harsh winter weather.

	Morning	Evening
Piedmont-East 4th St.	1 car	1 car
Main Line	10 cars	4 cars
Allouez	1 car	3 cars
Billings Park-Broadway	none	1 car
Total additional required	12 cars	9 cars

A unique feature was the mid-day rush hour service, the same in both summer and winter, which also required additional cars.

Main Line: 10 minute service to 71st Ave.W. and Grand Ave.	6 cars
West Duluth-Aerial Bridge: 10 minute service to 32nd Ave. W. and Superior St.	4 cars
East End-Allouez: 10 minute service over entire line	3 cars
Total	13 cars

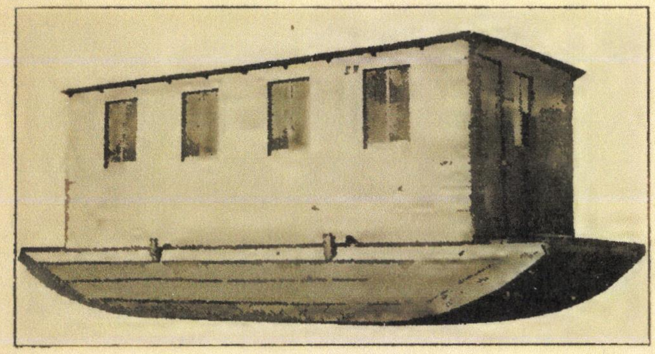
Thus the greatest number of cars required was 113 during the evening rush hour in the winter months.

Street Railway Review 6-15-1894

A CABLE RAILWAY ON THE ICE.

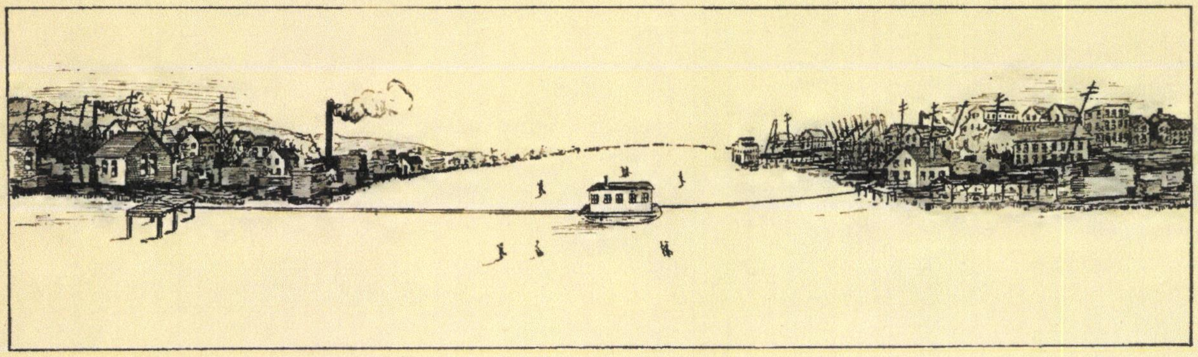
The Amphibian of Duluth and Superior.—Crossing Cold Superior on the Ice.—An Unique Idea.

The REVIEW has in its day illustrated a number of unique forms of transit, some practical and some only curiosities. To the practical category, however, belongs the idea brought out in the story of the Duluth-Superior ferry barge, last winter, and which was the joint idea of that competent and progressive street railway man, H. M. Sloan, superintendent of the Superior Rapid Transit Company, Superior, Wis., and A. C. Majo, a bright marine designer.



THE ICE FERRY SCOW.

The details of the matter were placed in the hands of A. C. Majo, who forthwith began to devise a means of giving street railway passengers a continuous trip, both summer and winter, across the icy waters of the bay, dividing Duluth, Minn., and West Superior, Wis. The present article described is the means of winter passage.



Mr. Majo says, in relation to the work: "Though a sailor by profession, with the trackless deep as a right of way, and while I have seen times when joints were low and the whole roadbed needed surfacing badly, still I presume any novelty connected with passenger transportation will be of interest to REIVEW readers."

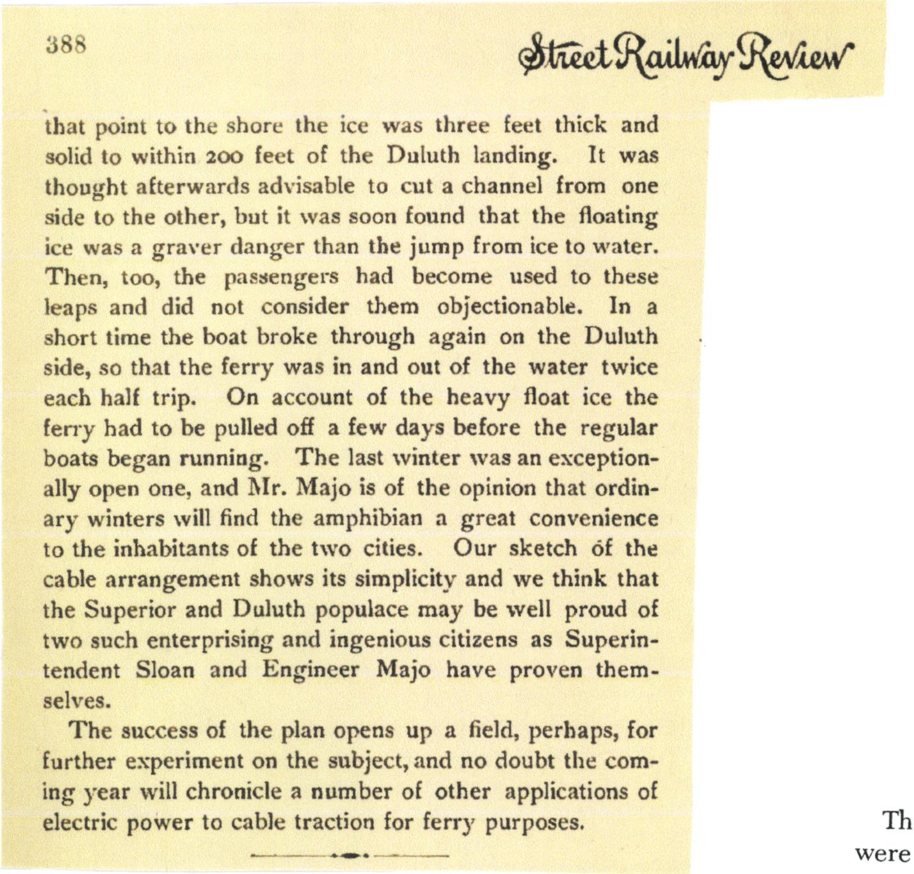
"While engaged in the ferry service between Connor's Point, Superior, and Rice's Point, Duluth, it occurred to me that the service could be continued throughout the winter when the ice had formed and navigation was impossible."

Briefly, the idea was to provide a scow with a cabin and a pair of runners, using a cable as a motive power. This plan was accepted by the Duluth and Superior street railway managements and the construction of the scow begun. The plan was enlarged to admit of the use of the vessel in water during the times of bad ice in early spring, as well as on the hard surface in the winter time. It was regarded as possible, however, that its use as a sailing vessel would be limited, as judicious sprinkling of the roadway would render the ice thick and smooth enough to keep up the weight a little time after the surrounding ice had yielded up part of its strength to springtime's approach. After this date of course, regular ferry business between the cities would be resumed.

The scow, an engraving of which we present, is 10 feet wide by 26 feet long by 34 inches deep. Six truss gunwales of 4 by 6-inch pine add strength; it is planked with 2-inch pine, with deck and all securely caulked and sheeted with iron. The cabin extends the whole width of the vessel, leaving three feet at each end for a platform. The runners are two in number and made of 4 by 6-inch oak, steel shod.

The distance between the two landing points is 1,200 feet, and to propel this amphibian a cable plant was improvised. The power plant was situated on the Superior side of the channel and consisted of two 20-horsepower motors geared to two 3-foot drums, or strictly speaking, to one drum, for the second mentioned served as the idler and also as a tension carriage, being set in a sliding bed, from the end of which was attached a chain which ran over pulleys to a weighted box. A sheave was set on the dock at the Duluth end for the terminal sheave. The cable used is an inch steel rope with the necessary carrying and guiding pulleys. This was all the propelling machinery required. The rope was run over the deck of the scow, which is provided with two simple screw grips, one at each end of the boat, to control the motion.

After a few alterations the boat started regular trips the first of January. On March 15th, the ice gave way at a point 1000 feet from the Superior shore. This was the anxious moment, but the amphibian did all that was expected of her, by sliding from the ice into the water, crossing the water and mounting the ice again, without a hitch. The break in the ice extended 150 feet and from



that point to the shore the ice was three feet thick and solid to within 200 feet of the Duluth landing. It was thought afterwards advisable to cut a channel from one side to the other, but it was soon found that the floating ice was a graver danger than the jump from ice to water. Then, too, the passengers had become used to these leaps and did not consider them objectionable. In a short time the boat broke through again on the Duluth side, so that the ferry was in and out of the water twice each half trip. On account of the heavy float ice the ferry had to be pulled off a few days before the regular boats began running. The last winter was an exceptionally open one, and Mr. Majo is of the opinion that ordinary winters will find the amphibian a great convenience to the inhabitants of the two cities. Our sketch of the cable arrangement shows its simplicity and we think that the Superior and Duluth populace may be well proud of two such enterprising and ingenious citizens as Superintendent Sloan and Engineer Majo have proven themselves.

The success of the plan opens up a field, perhaps, for further experiment on the subject, and no doubt the coming year will chronicle a number of other applications of electric power to cable traction for ferry purposes.

Early Duluth-Superior Service

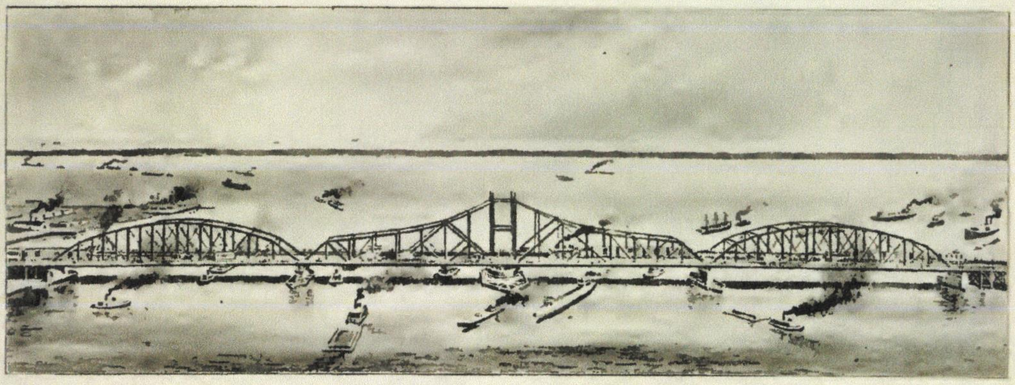
The only connections between the two cities originally were by the railroads. There were no public bridges across the river or the bay. Beginning May 7, 1893, DSR began operating the ferry boat "Estelle" between Rice's Point and the south end of the Tower Bay slip (near 3rd St. and Tower Ave.) as well as Connor's Point; connections with SRTR cars were made at both points. SRTR also had a joint arrangement with a ferry service which operated from Connor's Point to Arthur Ave. and possibly to a dock at the foot of 3rd Ave. W. Apparently there was competition of a not-too-happy nature between these two ferry boat operations.

When ice halted ferry boat operation in December, 1893, DSR placed in operation an electric ferry sled designed by Herbert Warren, DSR's General Manager. The sled consisted of a substantial "scow" under which were located regular sleigh runners; on the deck was a house fitted up like a streetcar. An electric motor on the shore operated a drum over which was run an "endless" wire cable which was attached to the sled, thus pulling the sled back and forth across the ice of the bay. The first operation of this sled took place December 22, 1893.

Apparently the sled was not the answer to winter operations, for in December, 1894, SRTR constructed a temporary timber trestle across the bay; about 1,000 ft. long, a single track was laid on the top which was about 3' above the surface of the ice. Thus SRTR cars could cross to the Duluth side of the bay. In the early spring the trestle was removed. It was rebuilt during the winters of 1894-1895, 1895-1896, and 1896-1897.

THE DULUTH-SUPERIOR BRIDGE.

The great steel drawbridge which joins the twin cities, Duluth, Minn., and Superior, Wis., has been completed and its opening was celebrated in a fitting manner. As may be noted from the illustration the bridge is of noble proportions and it is said to be the third largest drawbridge. Between the piers on the dock lines of Duluth and Superior the bridge is 1,094 ft. and rests on five piers; the draw-span is 491 ft. in length and weighs 1,800 tons. The draw-span rests upon 60 rollers which are arranged in a circle 40 ft. in diameter; it is actuated by electricity. The rollers are of cast steel and weigh 2,000 lbs. each. The motors are connected to the power station by means of submarine cables and also to a set of storage batteries on the pier which can be used in the event of an accident to the cables. The electrical equipment is the most powerful ever placed on a drawbridge as it is designed to turn the bridge inside of two minutes even in the highest wind. Automatic electric brakes and indicators enable the man in the operating cab to tell the exact position of the bridge and manipulate the end locking apparatus with certainty.



STEEL DRAWBRIDGE CONNECTING DULUTH, MINN., AND SUPERIOR, WIS.

The bridge was designed to carry four tons per lineal foot, which together with the weight of the structure makes a load of 10,000 tons. The material is mild open hearth steel furnished by the Pennsylvania Steel Company. Work began in July, 1896, and ended July 3, 1897; the cost exceeded $1,000,000. It is considered a triumph of engineering skill as it meets the requirements of all kinds of traffic between the cities and does not interfere with the great volume of commerce on the bay. There are two steam railroad tracks, two trolley tracks, two roadways and two side walks.

◆

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that "the charges for passage on said road shall not exceed 20 cents for any through line and 10 cents for half lines or short distances." In 1890-1 the Consolidated secured from the legislature a validating act to remove alleged flaws in the charters of the absorbed companies, and as this act contained the clause "be liable for street paving and to other regulations of municipal companies incorporated by separate acts by the law of this state," it was construed that the Consolidated was brought under all regulations passed by legislature in the case of all other street railways in the state. One of these legislature bills allowed the city of Augusta "to regulate fares," and on the strength of this the Atlanta council passed an ordinance to take effect May 1, 1897, by which a passenger was to ride from any point on the company's line to any other point for one 5-cent fare. The effect of this ordinance caused a slump in the company's securities, and bondholders residing in another state took the case into the United States court in New Orleans, where a restraining order was issued May 27.

SRR 1-15-1900

The Duluth (Minn.) Street Railway Co. has 1¼ miles of the portable snow fence shown in Fig. 2, which, during the winter months, is placed from 60 to 80 ft. from the exposed tracks, depending on the location. The company finds little difficulty in securing permission from abutting owners to erect the fence on their land. The fence is made up in 12-ft. panels, with the supporting legs and braces designed to be folded up for handling; it will be noted that the longitudinal planks on this fence are more numerous and spaced closer than in the fences previously mentioned. When built in 1894 the following was the itemized cost per mile:

51,000 ft. lumber @ $7.50 per M	$382.50
2,640 machine bolts, ½-in., @ 85 cents per 100	22.44
70 lb. ½-in. cut washers @ 3 cents	2.10
300 lb. wire nails @ 1½ cents	4.50
51 days labor @ $2.00	102.00
Total	$513.54

Mr. Herbert Warren, general manager of the company, in sending us the figures adds that at the present time the same quality of lumber would cost $13 per M and labor would cost $2.25 per day.

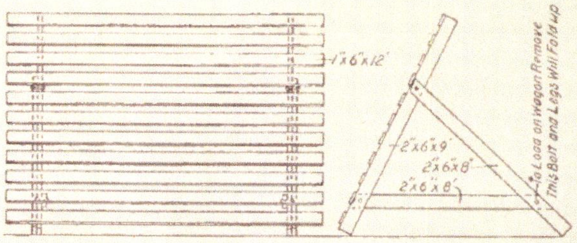


FIG. 2.—FENCE USED BY DULUTH STREET RAILWAY.

The company also has about ¾ mile of fence of a similar pattern, but not so high, and some brush fence upon the lines of the Lakeside Ry., which it operates.

DESTINATION SIGNS

Early Duluth cars originally carried four two-faced board signs which were inserted in brackets on the roof of the car; one on each end and one on each side. A bracket mounted on the front dash allowed for the hanging of special signs not regularly used, such as BALL PARK or TO CARHOUSE ONLY.

Superior cars originally carried sign boards similar to Duluth cars except that no signs were carried on the sides of the car roof, just the ends. In addition a vertically hung 8" x 30" board was used, painted a specific color to designate the line on which the car was operating. Examples were: GREEN, "Billings Park (Steel Plant)" line; YELLOW, "South Superior" line; RED, "East End" line; and STRIPES (colors not mentioned), "Interstate" line.

Single-truck cars purchased in 1893 and 1894 were fitted with a four-faced revolving wood sign mounted on the roof, one at each end and one on each side. The faces were painted various colors to more quickly identify the route of the car.

In July 1893 Duluth began hanging lanterns on the right-hand front dash of each car with various colored lantern chimneys identifying the routes of the cars.

Line	Light Color	Destination Sign Boards Letters on Background		
"West Duluth-East End"	None	?		?
"Lakeside"	Yellow	Silver	on	Yellow
"Lake & Garfield"	Blue	?	on	Blue
"E. 4th St."	Red	Black	on	Red
"Woodland"	Green	?	on	Green

The lanterns were replaced, beginning in 1897, with permanently installed electric marker lights on the right-hand front dash, using changeable colored lenses.

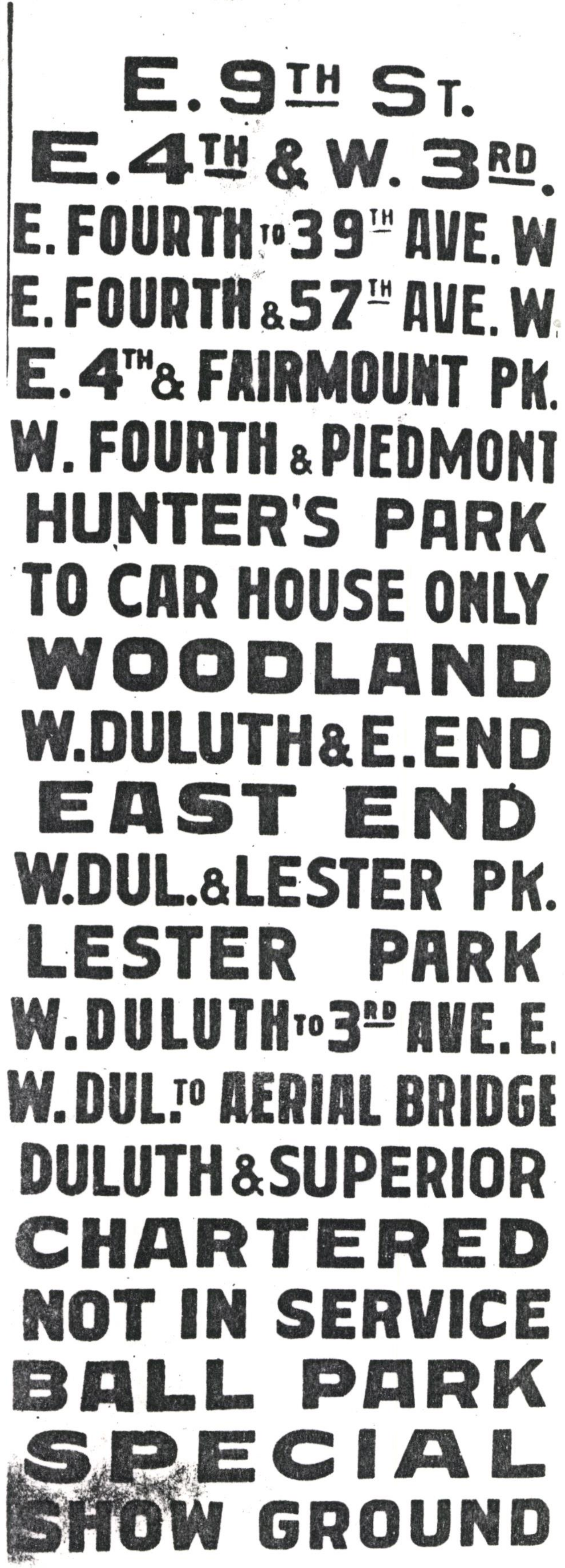
Beginning February 25, 1903, DSR began the use of transparent glass signs which could be inserted in brackets just ahead of the front deck roof window on single-truck cars. Lights inside the carbody illuminated the signs at night. Various colors of glass were used to denote the various lines. Examples were: "Woodland", white letters on green; "East Fourth", white letters on red (formerly used black letters on white).

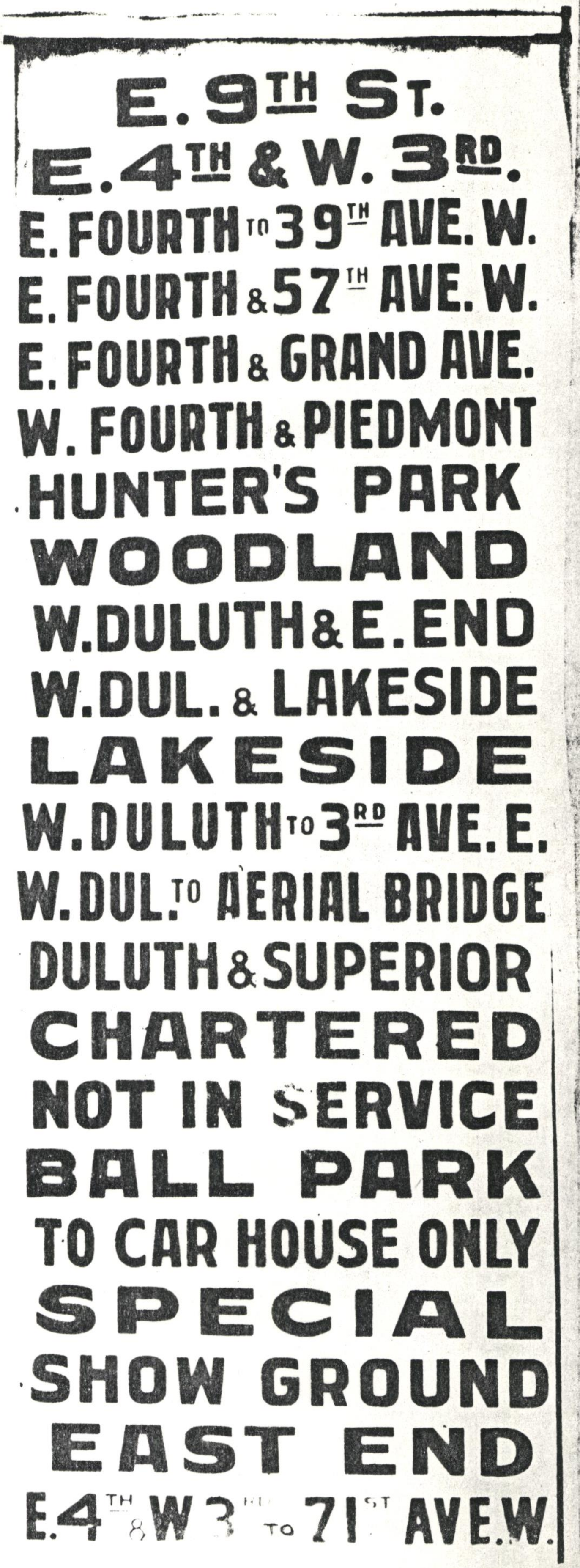
In January 1903 the destination signs on the "Interstate" line were changed to read DULUTH & SUPERIOR instead of INTERSTATE.

Double-truck cars built by TCRT for DSR were equipped with the destination rollsign boxes installed on the deck roof on both sides toward the rear of the car and one on the front. These were illuminated by interior lights at night. Black letters on a white background were used as on TCRT. However the electric marker lights (using changeable colored lenses) were retained on the right-hand front dash.

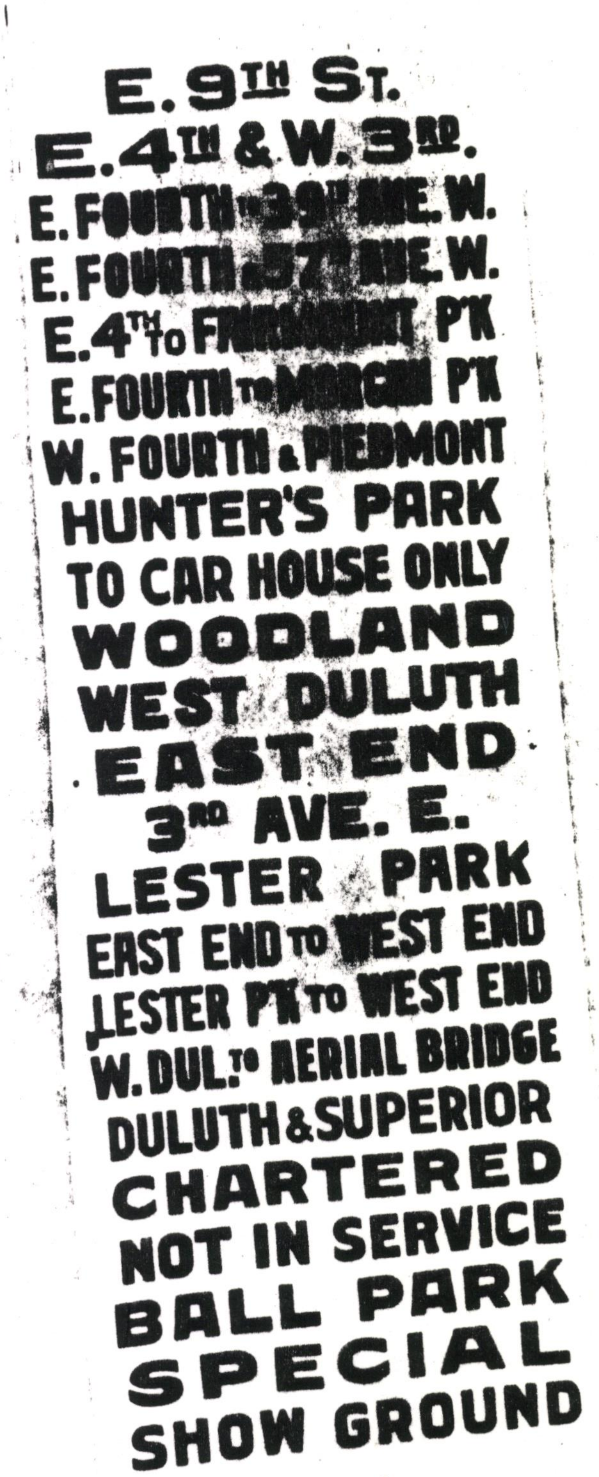
In 1919 it was decided to replace the colored marker light system with the installation of roll-sign boxes mounted in the front platform right-hand upper window which used large 10" high characters and was illuminated at night. This system went into effect January 8, 1920. Duluth destinations were given numbers while Superior destinations were given letters. These signs white characters on a black background.

6-28-1915


E. 9TH ST.
E. 4TH & W. 3RD.
E. FOURTH TO 39TH AVE. W
E. FOURTH & 57TH AVE. W.
E. 4TH & FAIRMOUNT PK.
W. FOURTH & PIEDMONT
HUNTER'S PARK
TO CAR HOUSE ONLY
WOODLAND
W. DULUTH & E. END
EAST END
W. DUL. & LESTER PK.
LESTER PARK
W. DULUTH TO 3RD AVE. E.
W. DUL. TO AERIAL BRIDGE
DULUTH & SUPERIOR
CHARTERED
NOT IN SERVICE
BALL PARK
SPECIAL
SHOW GROUND

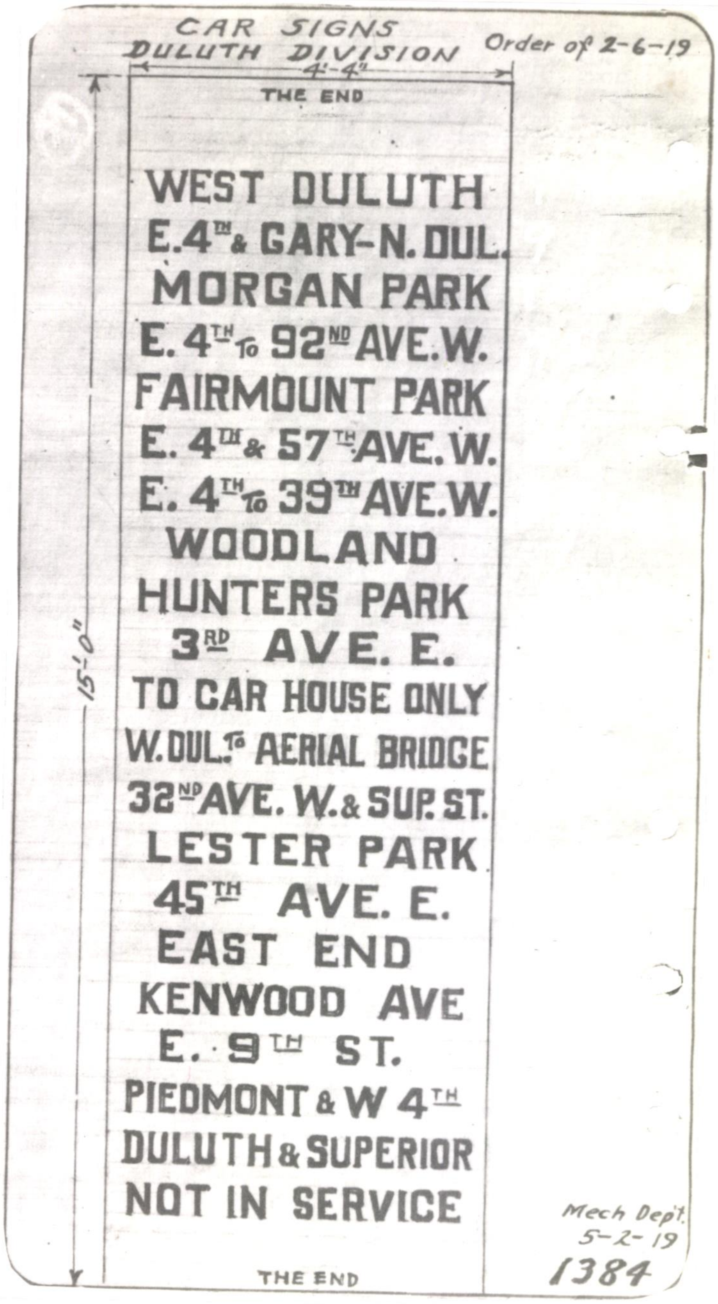

E. 9TH ST.
E. 4TH & W. 3RD.
E. FOURTH TO 39TH AVE. W.
E. FOURTH & 57TH AVE. W.
E. FOURTH & GRAND AVE.
W. FOURTH & PIEDMONT
HUNTER'S PARK
WOODLAND
W. DULUTH & E. END
W. DUL. & LAKESIDE
LAKESIDE
W. DULUTH TO 3RD AVE. E.
W. DUL. TO AERIAL BRIDGE
DULUTH & SUPERIOR
CHARTERED
NOT IN SERVICE
BALL PARK
TO CAR HOUSE ONLY
SPECIAL
SHOW GROUND
EAST END
E. 4TH & W 3RD TO 71ST AVE. W.

10-22-15



E. 9TH ST.
E. 4TH & W. 3RD.
E. FOURTH TO 39TH AVE. W.
E. FOURTH TO 57TH AVE. W.
E. 4TH TO FAIRMOUNT P'K
E. FOURTH TO MORGAN P'K
W. FOURTH & PIEDMONT
HUNTER'S PARK
TO CAR HOUSE ONLY
WOODLAND
WEST DULUTH
EAST END
3RD AVE. E.
LESTER PARK
EAST END TO WEST END
LESTER P'K TO WEST END
W. DUL. TO AERIAL BRIDGE
DULUTH & SUPERIOR
CHARTERED
NOT IN SERVICE
BALL PARK
SPECIAL
SHOW GROUND

10.22.15



CAR SIGNS
DULUTH DIVISION
Order of 2-6-19

4'-4"

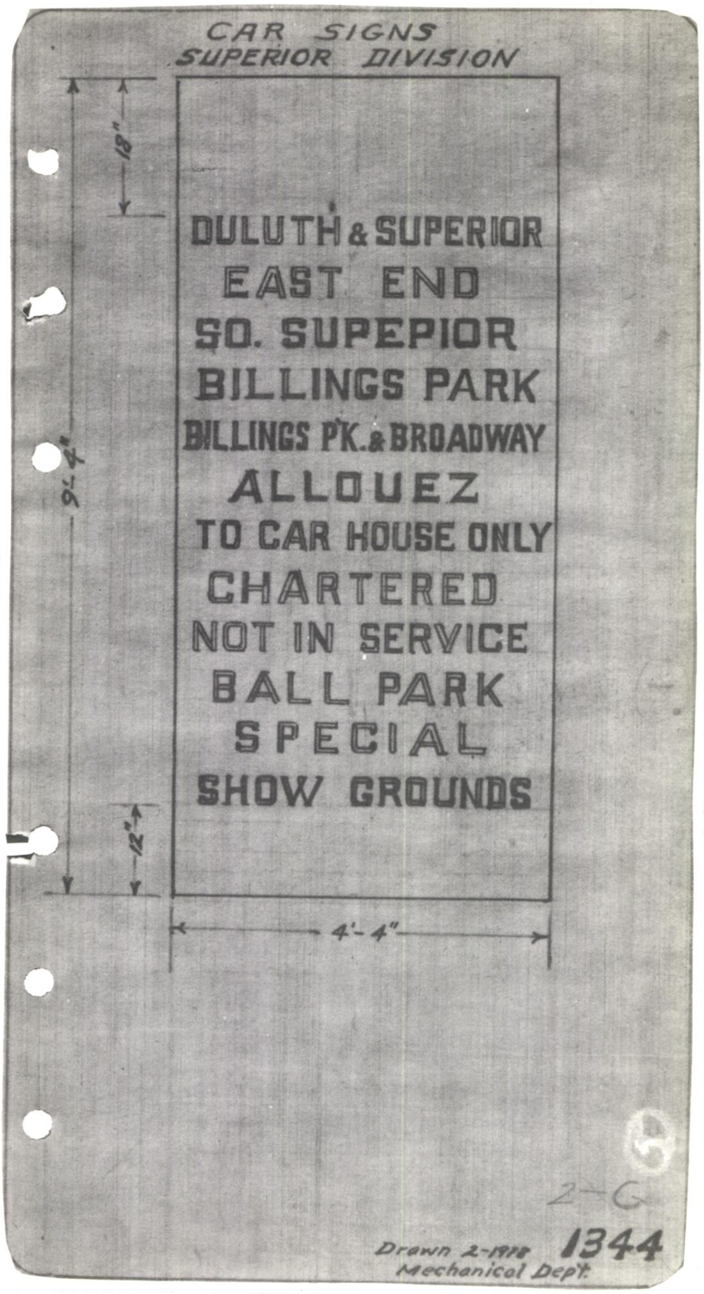
THE END

WEST DULUTH
E. 4TH & GARY-N. DUL.
MORGAN PARK
E. 4TH TO 92ND AVE. W.
FAIRMOUNT PARK
E. 4TH & 57TH AVE. W.
E. 4TH TO 39TH AVE. W.
WOODLAND
HUNTERS PARK
3RD AVE. E.
TO CAR HOUSE ONLY
W. DUL. TO AERIAL BRIDGE
32ND AVE. W. & SUP. ST.
LESTER PARK
45TH AVE. E.
EAST END
KENWOOD AVE
E. 9TH ST.
PIEDMONT & W 4TH
DULUTH & SUPERIOR
NOT IN SERVICE

THE END

15'-0"

Mech Dept.
5-2-19
1384



CAR SIGNS
SUPERIOR DIVISION

18"

DULUTH & SUPERIOR
EAST END
SO. SUPEPIOR
BILLINGS PARK
BILLINGS P'K. & BROADWAY
ALLOUEZ
TO CAR HOUSE ONLY
CHARTERED
NOT IN SERVICE
BALL PARK
SPECIAL
SHOW GROUNDS

9'-4"

12"

4'-4"

2-G

Drawn 2-1918
Mechanical Dept.
1344

DULUTH DIVISION TIMETABLES
MAY 16, 1919

Duluth-Superior line
Lester Park and Woodland Avenue lines
East 4th Street, West 3rd Street, 57th Avenue West, Morgan Park, Gary-New Duluth lines
West Duluth to Aerial Bridge line
Piedmont to East 9th Street and Kenwood Avenue lines
Park Point line
7th Avenue line [Incline Railway]
Highland Avenue line
West 4th Street line

Cab Window Signs
January 1,1928

Duluth Local Cars

45	45th Ave. E. and Superior St.
32	32nd Ave. W. and Superior St.
16	St.Paul Ave. and Woodland Ave.
61	61st Ave. E. and Superior St.
8	8th Ave. W. and Superior St.
7	Austin St. and Woodland Ave.
24	24th Ave. E. and Superior St.
11	St.Marie St. and Kenwood Ave.
13	13th Ave. E. and E. 9th St.
10	10th St. and 23rd Ave. W.
0	26th Ave. W. and Superior St.
1	62nd Ave. W. and Raleigh St.
2	Morse St. and Lake Ave.
21	21st Ave. W. and Superior St.
3	3rd Ave. E. and Superior St.
39	39th Ave. W. and Grand Ave.
17	57th Ave. W. and Grand Ave.
57	57th Ave. W. and Medina St.
4	24th Ave. E. and E. 4th St.
9	McCuen St. and Commonwealth Ave.
14	West Blvd. and 4th St. (Morgan Park)
92	92nd Ave. W. and Grand Ave.
71	71st Ave. W. and Grand Ave.
22	Kent Road and E. 8th St.
20	Duluth Approach to D-S Bridge
37	37th Ave. W. and Oneota St.
12	Armory Loop
52	52nd Ave. E. and Wyoming St.

Superior Local Cars

S	63rd St. and Tower Ave.
T	Broadway and Tower Ave.
G	21st St. and Grand Ave.
L	3rd St. and Grand Ave.
B	Billings Park Loop
H	Hill Ave. and Belknap St.
N	21st St. and Tower Ave.
C	4th St. and Ogden Ave.
J	Belknap St. and Tower Ave.
F	46th St. and Tower Ave.
A	McBain Ave. and 2nd St.
E	Robertson Ave. and 4th St.
K	Catlin Ave. and Belknap St.
Y	Ogden Ave. and 3rd St.
D	Superior Approach to D-S Bridge

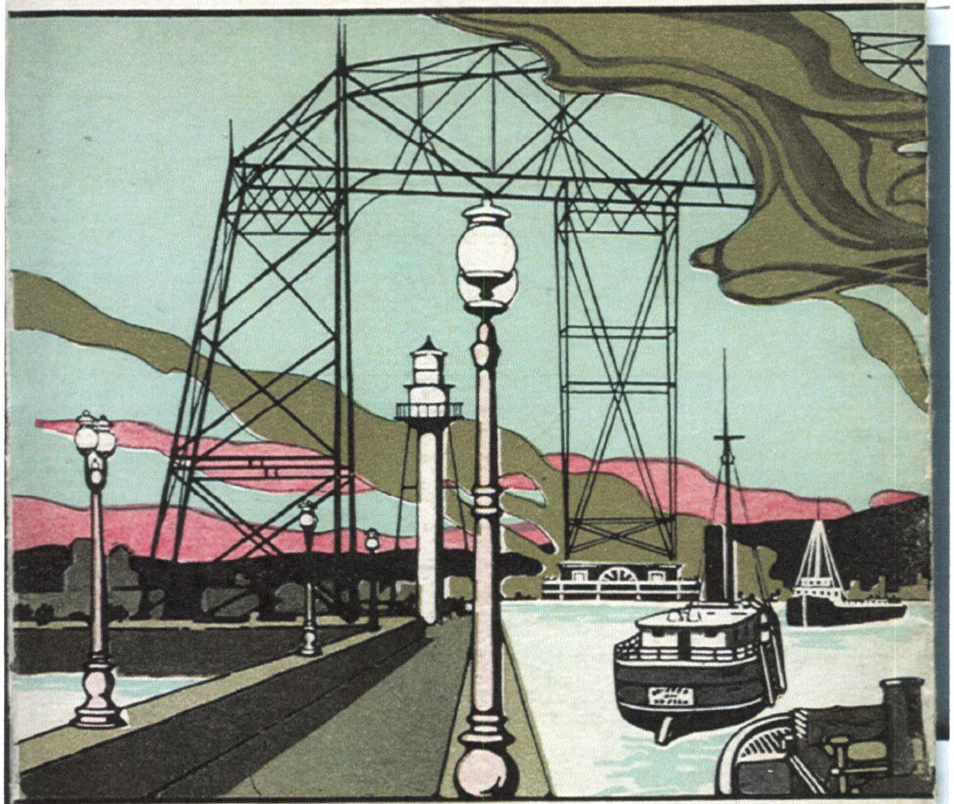
Not In Service
Chartered
Show Ground

Interstate Cars

These cars had all the Superior alphabetical signs including
Not In Service
Chartered
Show Ground
as well as these Duluth numerical:

24	24th Ave. E. and Superior St.
3	3rd Ave. E. and Superior St.
0	26th Ave. W. and Superior St.
2	Morse St. and Lake Ave. S.
12	Armory Loop
20	Duluth Approach to D-S Bridge
71	71st Ave. W. and Grand Ave.
52	52nd Ave. E. and Wyoming Ave.
45	45th Ave. E. and Superior St.

HOW TO SEE DULUTH AND SUPERIOR



ON THE CARS
of the

DULUTH
TWIN PORTS
ELECTRIC
LINES
SUPERIOR

Copyright, 1911, by Her

How to See Duluth and Superior

YOU can reach nearly every point of interest in and around Duluth and Superior, as well as their desirable residence sections, over the well-equipped Electric Car Lines of The Duluth Street Railway. The fare on all local lines in each city is 5 cents, with universal transfers. From any point in Duluth to any point in Superior, 10 cents.

The Company operates 80 miles of track and its equipment and service, in every respect, are the best that money, skill, and consideration for patrons can provide.

Every known device for the comfort, convenience, and safety of passengers is employed. The tracks are heavy and smooth. Most of the lines are equipped with large 46-foot Cars of modern and expensive construction, representing the last word in the Car-building art. The Cars are roomy, easy-riding, comfortable, and handsomely finished. They are mounted on heavy double trucks and equipped with powerful motors, air-brakes, whistles, and electric signal bells, as well as being brilliantly illuminated. Easy, spring-cane seats are provided. In cold weather, the Cars are heated with hot water and provided with storm sash. In warm weather, their large, deep windows insure the freest circulation of air. There are no better built or more comfortable Electric Cars anywhere than those of The Duluth Street Railway.

The following table gives a list of interesting places to see in both cities, and also answers questions as to distance, time, and fare.

Car Trips in Duluth — From Superior St. and 3d Ave., W.— In Center of Duluth

PLACES TO VISIT	Distance (Miles)	Minutes Bet'n Cars	Fare Each Way	* Minutes for R'd Trip	TAKE CARS MARKED
Superior, Wisconsin, ...	5¾	10	10 Cents	80	Duluth and Superior.
Aerial Bridge, ...	¾	10	5 Cents	20	W. Dul. and Aerial Bridge.
Minnesota Point, ...	3¾	10	7 Cents	60	W. Dul. and Aerial Bridge.
East End — Residences, ...	2½	5	5 Cents	35	East End. Woodland. Lakeside.
Hunter's Park — Residences, ...	4	20	5 Cents	60	Woodland.
Lester Park — Fish Hatchery, . .	6	20	5 Cents	75	Lakeside.
High School Building, ...	½	10	5 Cents	15	E. 4th and Grand Ave. E. 4th and 57th Ave., W. W. 4th and Piedmont.
Chester Park, ...	1¾	10	5 Cents	35	E. 4th and Grand Ave. E. 4th and 57th Ave., W.
Cascade Park — 1½ Blocks N. of Cars,	1¼	20	5 Cents	30	W. 4th and Piedmont.
"Hill Top" — Incline, ...	1	30	5 Cents	30	Any W.-bound Car — Transfer to Incline at 7th Ave., W.
Lincoln Park, ...	2	10	5 Cents	30	E. 4th and 57th Ave. W. E. 4th and Grand Ave.
Fairmont Park, ...	6	20	5 Cents	80	E. 4th and Grand Ave.
Famous Ore Docks, ...	2½	10	5 Cents	40	W. Dul. and Aerial Bridge. W. Dul. to 3d Ave., E.
West Duluth, ...	5	10	5 Cents	65	W. Dul. and Aerial Bridge. W. Dul. to 3d Ave., E.

Car Information

In Duluth, at the corner of Superior St. and 3d Ave., W., and in Superior, at the corner of Tower Ave. and Belknap St., "Car Starter's Booths" will be found, at which you can get definite, reliable information regarding the service of The Duluth Street Railway.

You are also invited to telephone, call on, or write to:

HERBERT WARREN, Gen'l Manager.

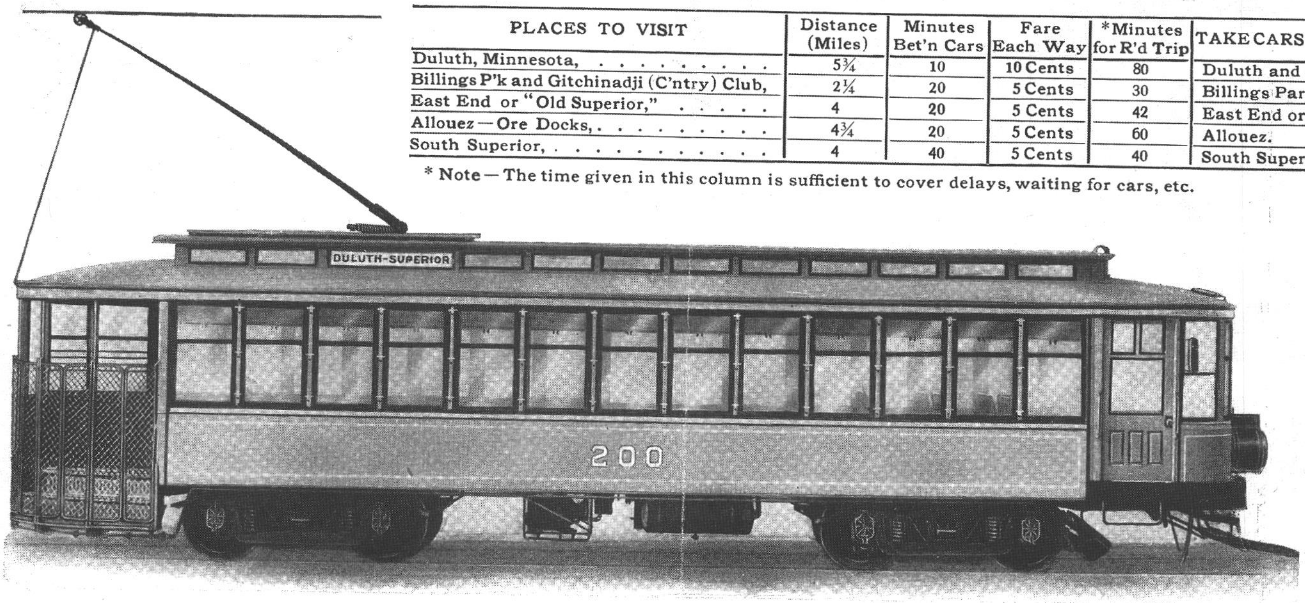
General Offices,
2631 West Superior St., Duluth.

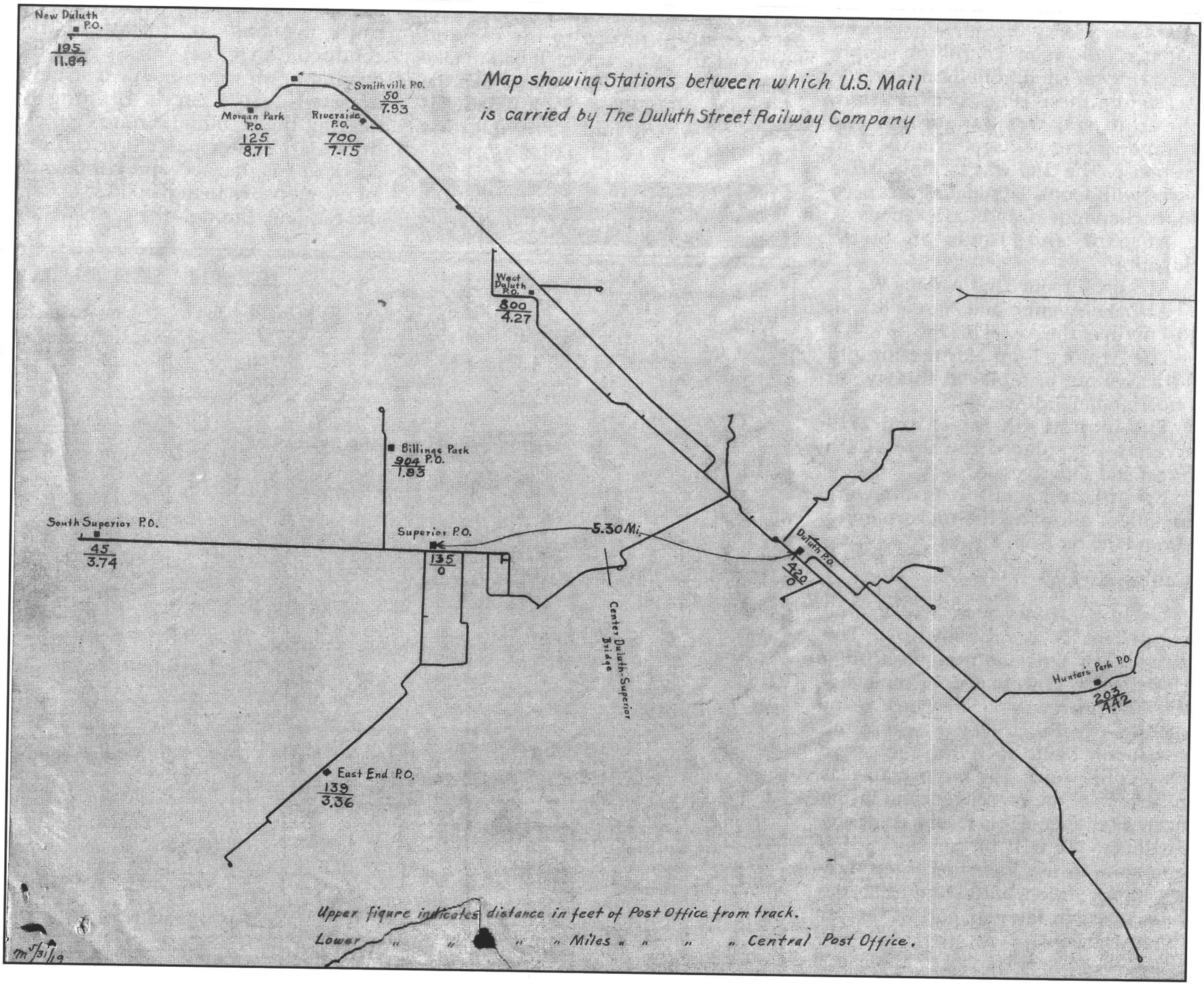
Telephones,
Bell, Melrose 260.
Zenith, Lincoln 55.

Car Trips in Superior — From Tower Ave. and Belknap St.— In Center of Superior

PLACES TO VISIT	Distance (Miles)	Minutes Bet'n Cars	Fare Each Way	*Minutes for R'd Trip	TAKE CARS MARKED
Duluth, Minnesota, ...	5¾	10	10 Cents	80	Duluth and Superior.
Billings P'k and Gitchinadji (C'ntry) Club,	2¼	20	5 Cents	30	Billings Park.
East End or "Old Superior,"	4	20	5 Cents	42	East End or Allouez.
Allouez — Ore Docks, ...	4¾	20	5 Cents	60	Allouez.
South Superior, ...	4	40	5 Cents	40	South Superior.

* Note — The time given in this column is sufficient to cover delays, waiting for cars, etc.

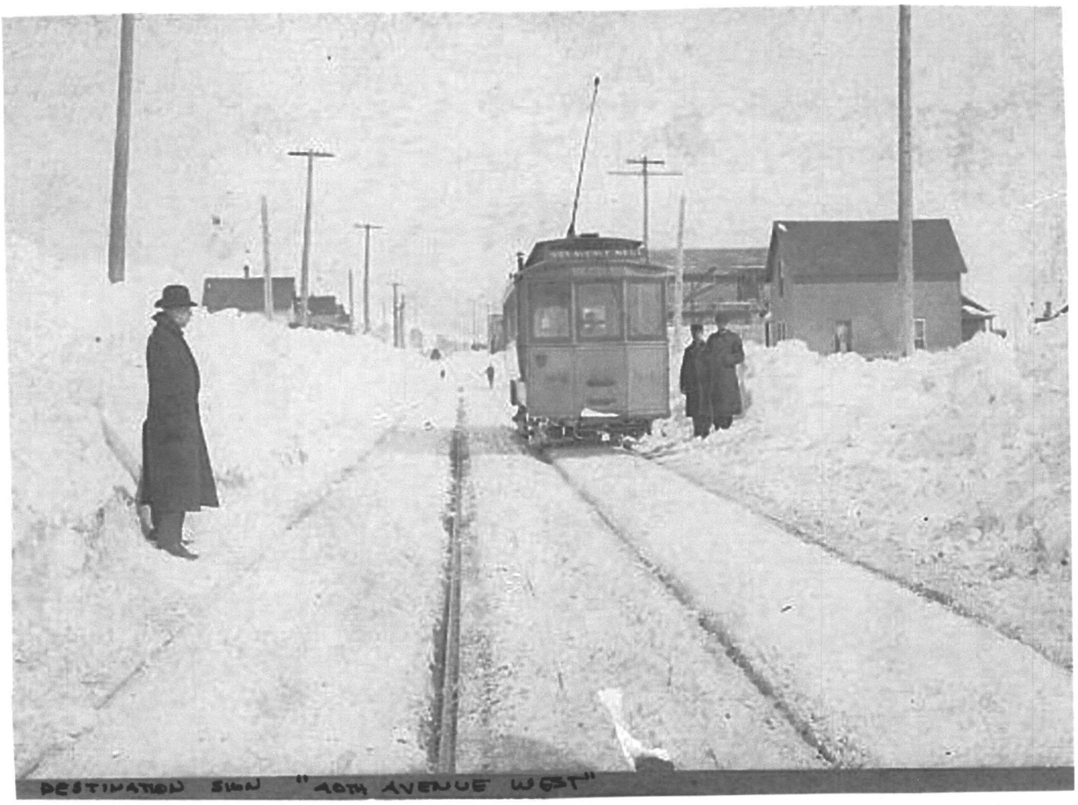



Map showing Stations between which U.S. Mail is carried by The Duluth Street Railway Company

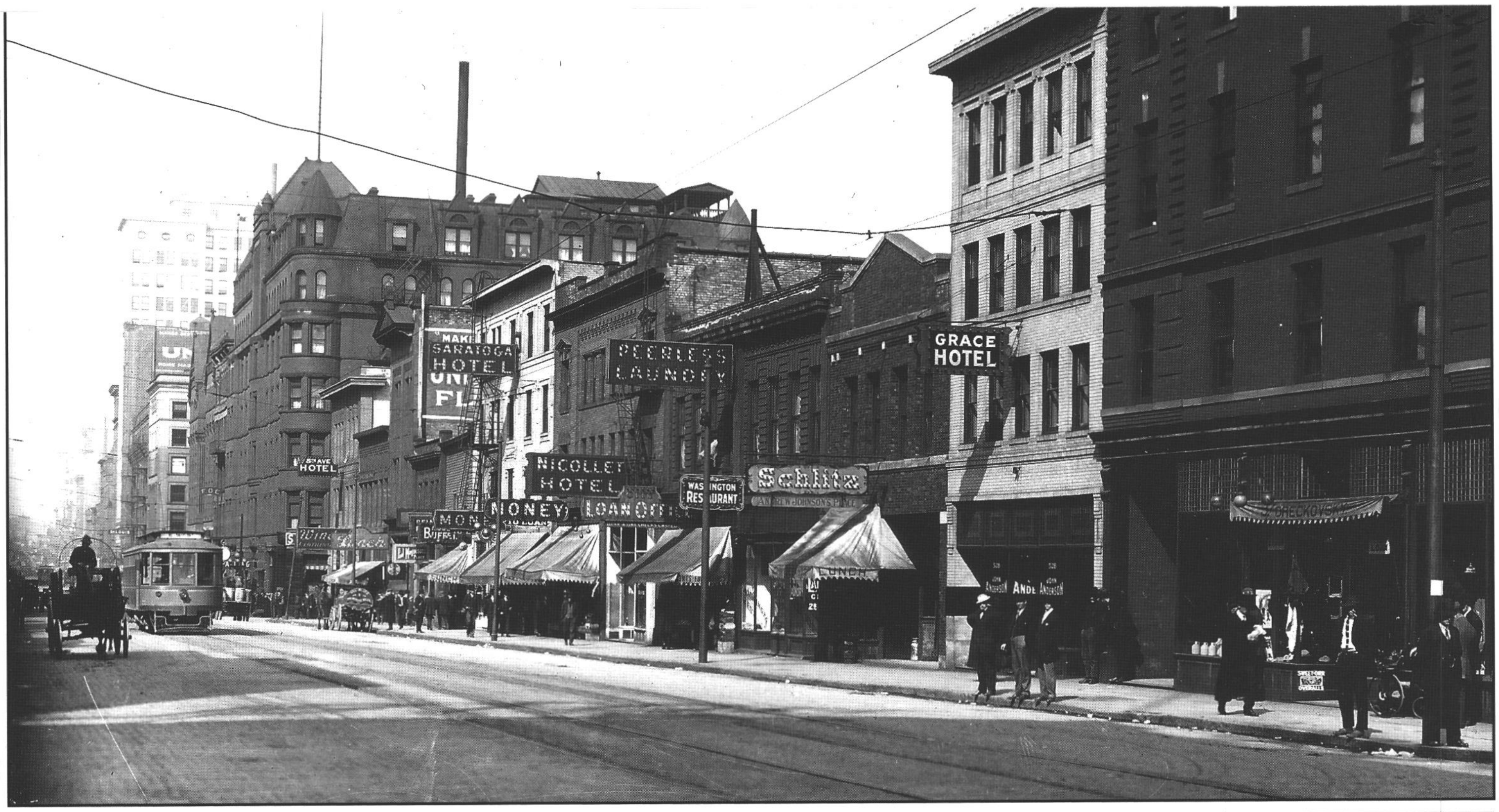
Upper figure indicates distance in feet of Post Office from track.
Lower " " " " Miles " " " " Central Post Office.

m 5/31/19

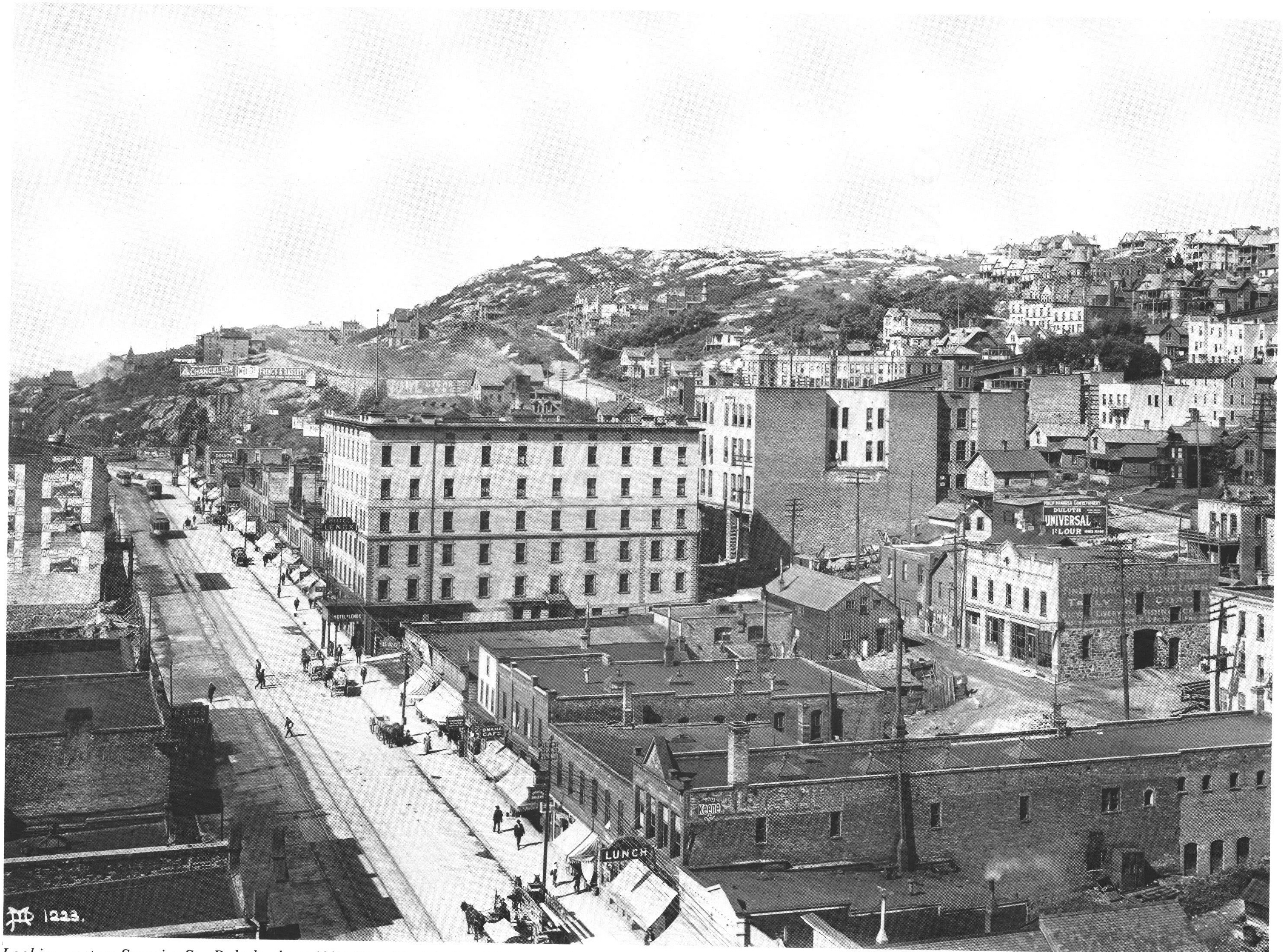
New Duluth P.O.
195
11.84
Smithville P.O.
50
7.93
Morgan Park P.O.
125
8.71
Riverside P.O.
700
7.15
West Duluth P.O.
800
4.27
Billings Park P.O.
904
1.83
South Superior P.O.
45
3.74
Superior P.O.
135
0
5.30 Mi.
Duluth P.O.
420
0
Center Duluth-Superior Bridge
Hunter's Park P.O.
203
4.42
East End P.O.
139
3.36



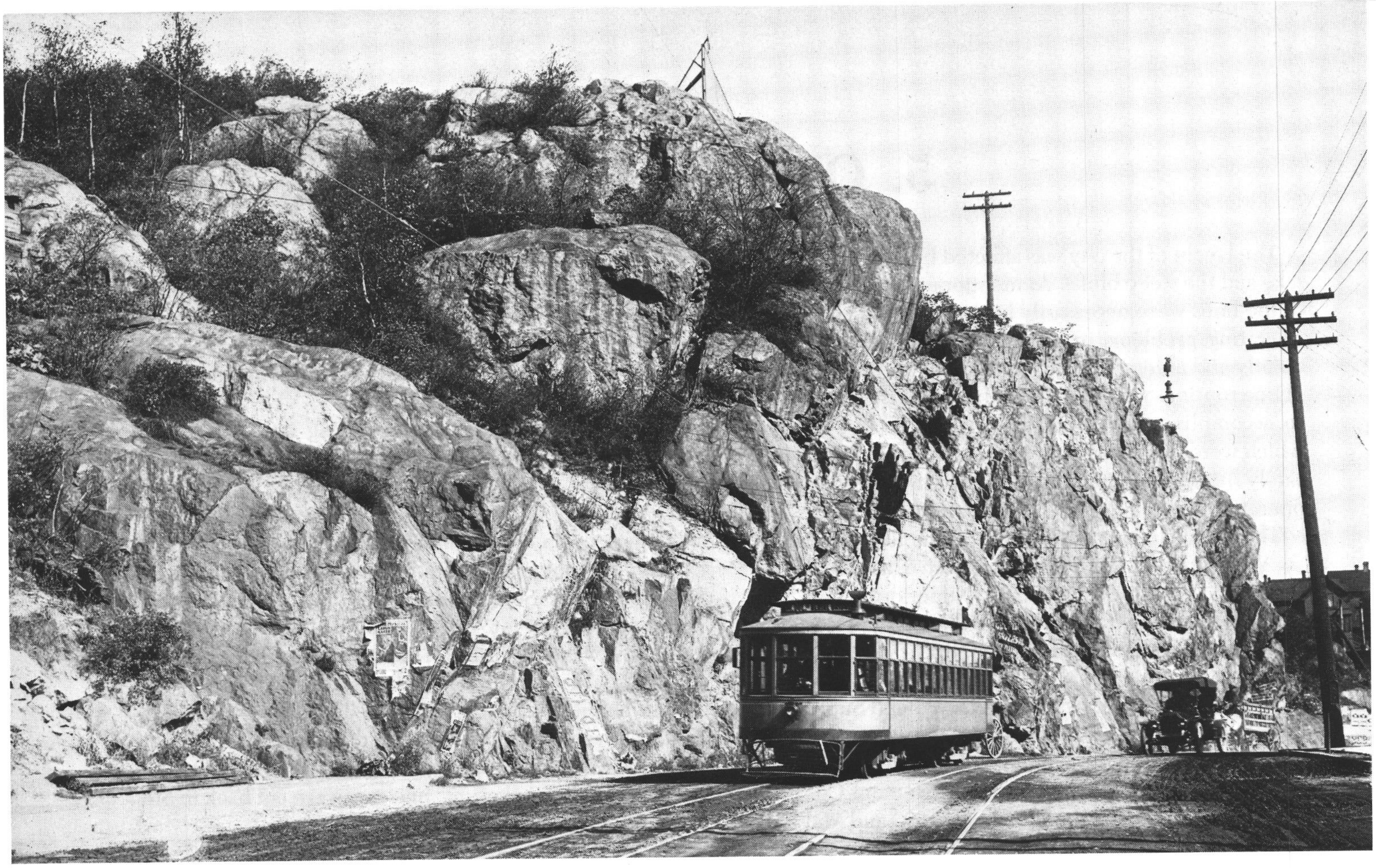
DESTINATION SIGN "40TH AVENUE WEST"


GRACE HOTEL
PEERLESS LAUNDRY
SARATOGA HOTEL
NICOLLET HOTEL
MONEY
LOAN OFFICE
WASHINGTON RESTAURANT
Schlitz
HOTEL

East of 3rd Avenue W., Interstate cars shared Superior Street through downtown Duluth with the Lester Park, Crosley, Woodland, and Aerial Bridge lines.

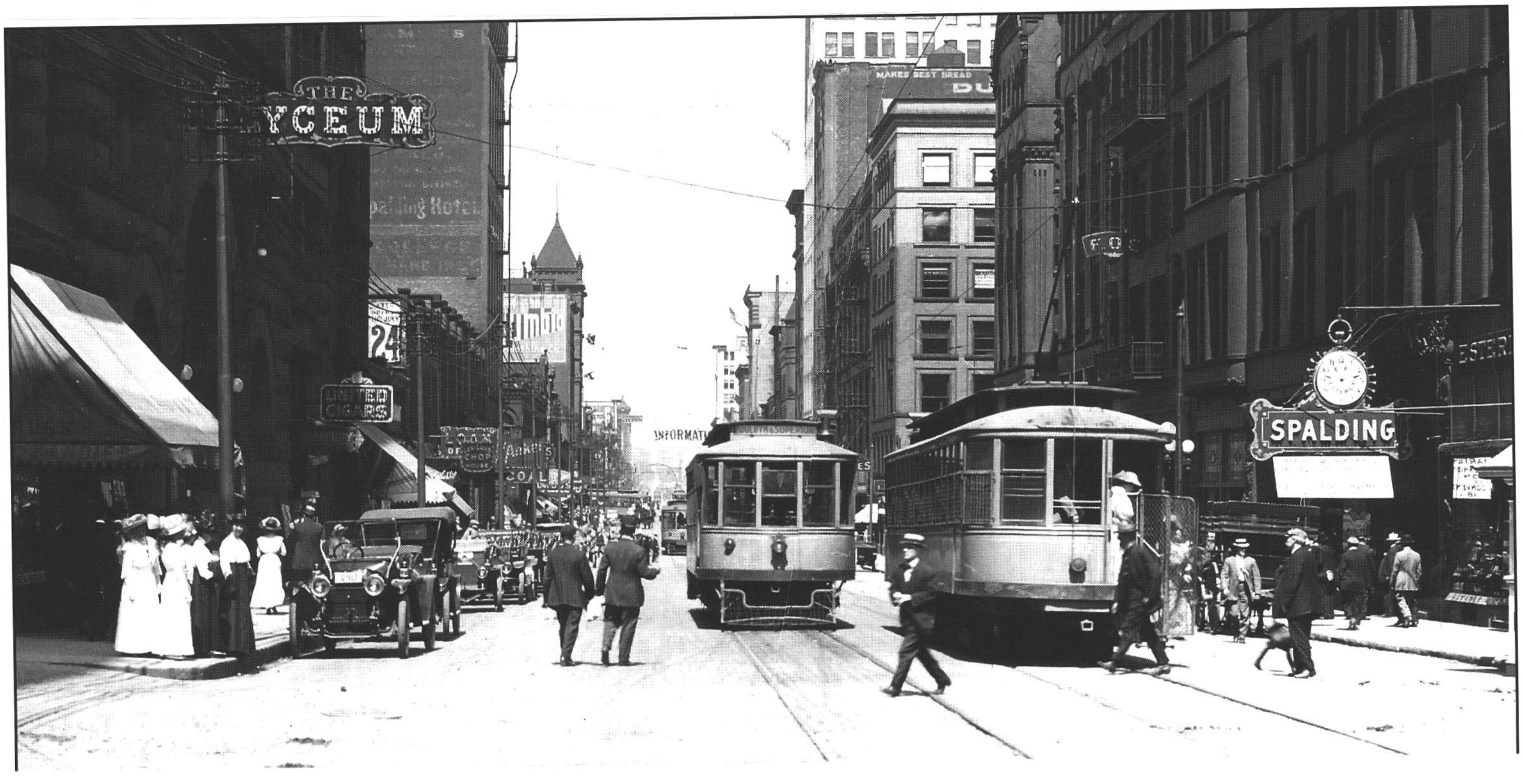

1223.
CHANCELLOR
FRENCH & BASSETT
HOTEL LENOX
DULUTH
UNIVERSAL FLOUR
OMAHA CAFE
Keene
LUNCH

Looking west on Superior St., Duluth, about 1907-1911. The 8th Ave. W. loop can be seen at left center, and the incline railway car on the structure at right center. The first eastbound car is opposite the incline railway station at 7th Ave. W. (McKenzie Studios



Above: A westbound "W. Duluth & Aerial Bridge" car passes the Point of Rocks near 14th Ave. W. and Superior St., April, 1910. (McKenzie Studios; Wayne C. Olsen collection)

Below: 5th Ave. W. and Superior St., Duluth, looking east on Superior St. about 1915. (Wayne C. Olsen collection)


THE LYCEUM
Spalding Hotel
UNITED CIGARS
LOAN
INFORMATION
MAKES BEST BREAD
SPALDING

Total Passengers.

Year	Duluth	Superior	Total
1891			
2			
3			
4			
5			
6			
7			
8			
9			
1900			
1	7,318,207	3,585,642	10,903,849
2	8,815,734	3,640,571	12,456,305
3	10,068,043	3,900,556	14,368,599
4	10,487,791	3,547,037	14,034,828
5	11,376,292	3,828,353	15,204,645
6	13,224,399	4,830,053	18,054,452
7	15,226,121	5,436,707	20,662,828
8	16,673,962	5,395,873	22,069,835
9	17,838,604	5,479,016	23,317,620
1910	19,621,673	6,145,977	25,767,650
1	20,244,173	5,849,888	26,094,061
2	19,320,775	5,725,345	25,046,120
3	22,794,559	6,959,269	29,753,828
4	23,624,306	6,782,705	30,407,011
5	21,629,220	5,706,238	27,335,458
6	25,749,691	7,043,271	32,792,962
7	29,420,624	8,181,825	37,602,449
8	30,143,796	8,985,702	39,129,498
9	35,033,472	10,225,655	45,259,127
1920	35,077,568	9,704,035	44,781,603
1	32,393,458	8,335,191	40,728,649
2	30,404,734	7,356,207	37,760,941
3	29,900,207	7,163,244	37,063,451
4	28,104,076	6,582,975	34,692,051
5	30,019,387	6,346,573	36,365,960
6	28,609,447	6,068,533	34,677,980
7	25,667,515	5,653,155	31,320,670
8	24,301,835	5,150,631	29,452,466
9	21,961,770	4,466,520	26,428,290
1930	18,239,488	3,631,007	21,870,495

See add'l sheets
at back of book.

WSB 1/1/24

DULUTH BELT LINE RAILWAY

(West Duluth)

GREAT NORTHERN POWER CO

(Fond du Lac)

DULUTH BELT LINE RAILWAY

WEST DULUTH

The Duluth Incline Railway was incorporated in Minnesota December 14, 1888. The company was owned by the Myers brothers, who were real estate promoters. They incorporated the Bay View Land Company in September, 1889, which acquired 1,250 acres of land in Bay View Heights which was platted into residential lots. An incline cable railway from West Duluth to Bay View Heights was to provide access to the development. This had already been successfully done in Pittsburgh, Kansas City, Cincinnati and San Francisco where, as promotional literature claimed, the best residences were to be found on surrounding hillsides and bluffs.

The line was built during the 1888-1889 boom. Right-of-way was very expensive to purchase, and in the company's eagerness often paid much more than the property was worth. It was reported on September 8, 1889 that the 1.5 miles of single track on level ground had been completed and that work on the incline portion was under construction. The incline was 7,300 ft. long with a rise of 600 ft. (about 700 ft.?); the steepest grade was 16%. A steam powerhouse was located at the top of the incline. Promotional literature stated that upon completion of the incline railway in October, 1889, the running of regular trains over the two mile line from Central Avenue, West Duluth to Bay View Heights was begun.

The articles of incorporation were amended January 16, 1890, to change the name to Duluth Belt Line Railway. The first operation under this name began July 8, 1890, with 24 minutes running time required for the one-way trip. Stations were located at, in descending order, Bay View Heights, Pleasant View, Incline (61st Ave. W. and Grand Ave.), Central Ave. (at Polk St.), and Iron Bay or Marinette Works. Connections were made at Incline Station with passenger trains of the St. Paul & Duluth Railroad. Passenger fare was five cents. Freight service was also operated, consisting mostly of timber to and lumber from the sawmills on Grassy Point. (The map on pages 340 and 341 show a "LeSare" on Grassy Point. This was a sawmill with lumber storage. MINNESOTA LOGGING RAILROADS by Frank King contains two references to this location: (1) page 125 Lesure Lumber Co. sawmill acquired by the Virginia & Rainy Lake Co.; (2) a fire July 10, 1909. at the LeSeuer Mill destroyed 18 million board-feet of lumber valued at $500,000.) No information is available on the original equipment operated; the photographs illustrating this section provide the only clues.

Directors and Officers		
J. R. Myers	Philadelphia	President
H. H. Myers	Duluth	Treasurer and General Manager
B. F. Myers	Duluth	Secretary
C. E. Dickerman	St. Paul (deceased)	1st Vice President
H. S. Moody	Boston (deceased)	
Officers only		
Victor Stearns	Duluth	General Counsel
E. W. Dibbell	Bay View Heights	General Superintendent 1904-1905
W. R. Ives	Bay View Heights	General Superintendent 1906-1915

There were 25 stockholders. The capital stock issued and outstanding was described as follows.

issued for cash	$100,000
issued for acquisition of stock of other corporations purported to own franchises covering right-of-way then thought desirable in carrying out enlarged plans of the railway. Franchises were allowed to lapse and are now worthless	$ 28,500
issue to pay salaries	$ 10,000
total	$138,500

Office address was 205 Lyceum Building, Duluth.

In June, 1902, the cars were equipped with telephones installed by the Zenith Telephone Company. An electric gong service had previously been used for conductors to signal the powerhouse to start and stop the cars. As the two cars operated were permanently attached to a single cable, one of the conductors would not know the cause of stopping or when the car would start. The new telephone system allowed the conductors to talk with each other as well as with the powerhouse engineer.

On April 13, 1904, it was reported that the cars ran for the first time in nearly two months. The line had been closed for a good part of the winter due to ice covering the tracks 10" to 12" deep along the Keene Creek bottoms because of the creek being blocked with ice jams. On May 8th it was still reported as being out of operation, the result of formation of ice in the cable slots.

The company was first required to file annual reports with the Minnesota Railroad & Warehouse Commission for the fiscal year ended June 30, 1904. At that time Bay View Heights consisted of only 40 to 50 houses. The officers reported the road had never (sic) paid operating expenses or repairs, but felt obligated to serve the hilltop residents. The physical property was listed.
Stationery engine and cable.
Two passenger cars and six flat cars. (Two flat cars as of 6-30-1915.)
Two miles of single track. Four curves. Length of straight track 1.50 miles.
Three wood bridges and one trestle.
Overhead highway crossings: four trestles.
Overhead railway crossigns: two bridges.

On June 30, 1906, it was announced that two 16 ft. closed passenger cars had been purchased and would be attached to the cable at once. These replaced the old bobtail cars which had been in use for years. The two newly-purchased cars were formerly Duluth St. Ry. numbers 25 and 28.

On August 21, 1909, it was announced that the trackage east of 61st Ave. W. and Grand Ave. would be abandoned and a terminal built at 61st Ave. and Grand Ave. where connections would be made with Duluth St. Ry. streetcars. The abandoned section eliminated several troublesome curves and considerable expensive trestle work. In addition the roadbed was becoming dilapidated and sinking into the mud. The timber hauling aspects of the company's business had considerably diminished resulting in unprofitable operations over this segment. The report to the MRR&WC for the fiscal year ended June 30, 1910, stated that 2,300 L.F. of track had been abandoned; the revised total was 1.50 miles. (1909)

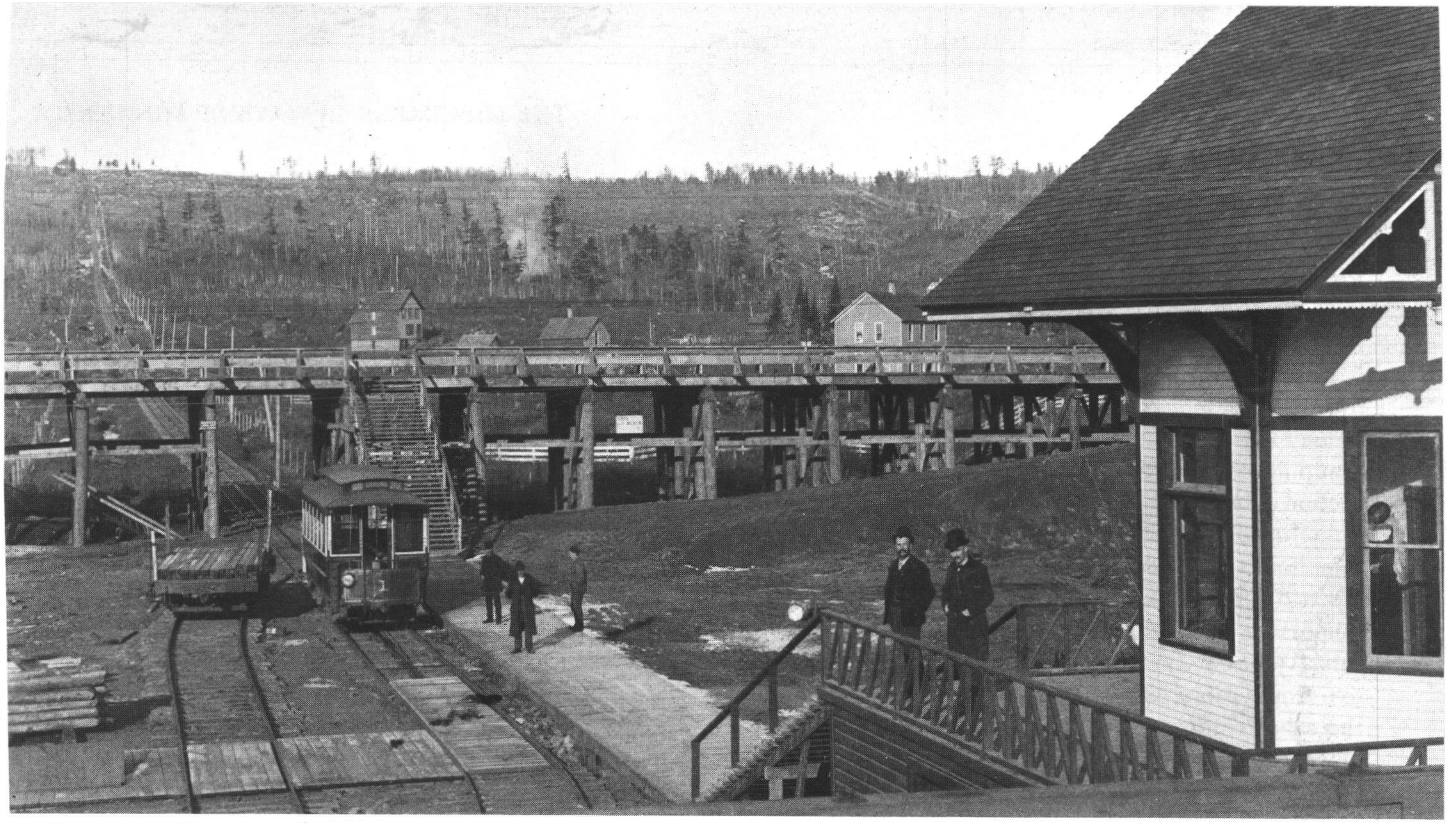
In April, 1910, extensive improvements were undertaken. A new cable plus an idler sheave on the engine replaced, completed April 6th. The powerhouse at Bay View Heights was repainted and refurnished. The cars exteriors were repainted and the interiors redecorated. Repairs to the roadbed begun in the fall of 1909 were completed. Materials from the abandoned portion of the line were salvaged and used in repairs and maintenance of the existing portion.

Provision was made with the Duluth St. Ry. for the transfer of passengers and car connections were printed on Duluth St. Ry. timetables. Duluth Belt Line Ry. operated hourly passenger service between 6:00 a.m. and 9:00 p.m. with a few trips added during the p.m. rush hour. Average running time was 8 minutes, or 10 m.p.h.

The report for the fiscal year ended June 30, 1914, stated that revenue passengers totaled 89,008. There were five employees: one officer, one clerk, two conductors, and one trackman.

During May, 1915, two cars, numbers 39 and 41, were purchased from Duluth St. Ry. and placed in service.

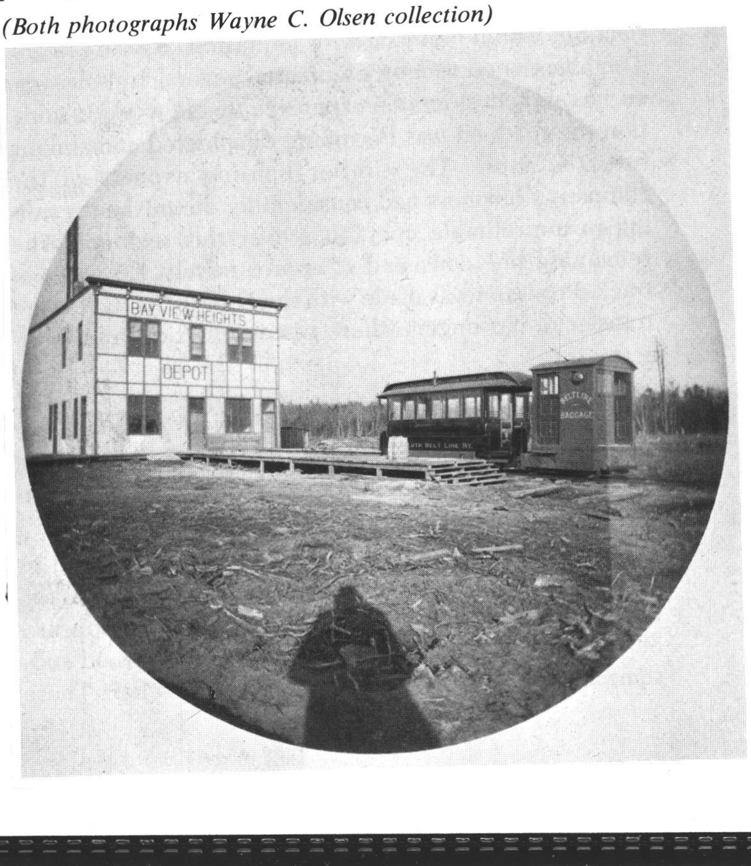
Operations were shut down for the winter in December, 1916. No annual report had been filed with the MRR&WC for the fiscal year ended June 30, 1916. It is not know whether operations were resumed in the spring of 1917. It was reported on December 9, 1917, that "since 1909 the company had abandoned stretches of right-of-way and used the material to repair the remainder of the ~~lien~~ line until the fall of 1917 when the whole property was pulled up and sold for junk".

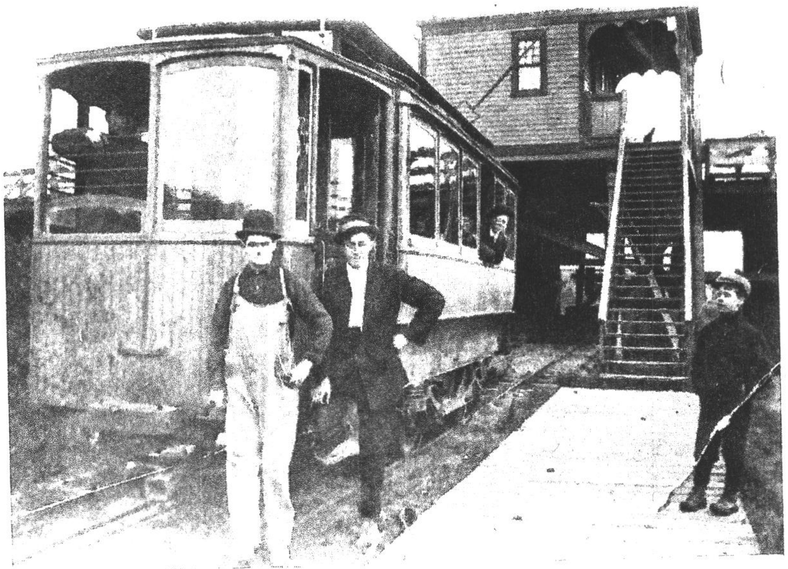


Above: The incline railway at 61st Ave. W. and Grand Ave., West Duluth, as it appeared in the 1890's. The trestle in the background carried Grand Ave. over the tracks. The building in the foreground is the depot of the St. Paul & Duluth Ry., located on a trestle which carried the railroad tracks over the incline railway.

Below: The depot and powerhouse at the top of the incline railway at Bay View Heights in the 1890's. The baggage car and passenger car are stopped at the loading platform.

(Both photographs Wayne C. Olsen collection)





The depot built in 1909 on the Grand Ave. trestle at 61st Ave. W. Terminal sheaves for the cable are located underneath the structure. Former Duluth St. Ry. streetcar 25 stands by the loading platform. Note the electrical contact arm on the car roof for lighting and signaling purposes. (Wayne C. Olsen collection)

DESTROY ALL FORMER CARDS.

NO. 3.

Takes Effect May 1, 1891, at 12.05 A. M.

DULUTH BELT LINE RAILWAY.

SOUTH BOUND, Down.

From Bay View Heights to Duluth, Iron Bay or Marinette Works.

Connects at West End Station with St. P. & D. Trains to Duluth at 11:55 a. m. and 4:47 p. m.

LEAVE AS FOLLOWS:	No. 1 Daily. Ex. Sun.	No. 3 Daily. Ex. Sun.	No. 5 Daily. Mixed.	No. 7 Daily.	No. 9 Daily.	No. 11 Daily.	No. 13 Daily.	No. 15 Daily.	No. 17 Daily.	No. 19 Daily.	No. 21 Daily. Mixed.	No. 23 Daily.	No. 25 Daily.
	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	p.m.	p.m.	p.m.	p.m.	p. m.	p.m.	p. m.
Bay View Heights...	6:40	7:30	8:30	9:30	10:55	11:30	1:30	2:30	3:30	4:30	5:30	7:30	8:30
Pleasant View......	6:44	7:34	8:34	9:34	10:59	11:34	1:34	2:34	3:34	4:34	5:34	7:34	8:34
Incline............	6:50	7:40	8:40	9:40	11:05	11:40	1:40	2:40	3:40	4:40	5:40	7:40	8:40
Central Ave.........	6:55	.....	.....	9:45	.....	11:45	1:45	.....	.....	.....	5:45	.....	.....
Fourth Ave. East....	6:57	.....	.....	9:47	.....	11:47	1:47	.....	.....	.....	5:47	.....	.....
Iron Bay or Marinette W'ks Ar.	7:00	.....	.....	9:50	.....	11:50	1:50	.....	.....	.....	6:00	.....	.....
	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.

Trains No. 5 and 21 run as Passengers on Sunday.

NORTH BOUND, Up.

TO BAY VIEW HEIGHTS.

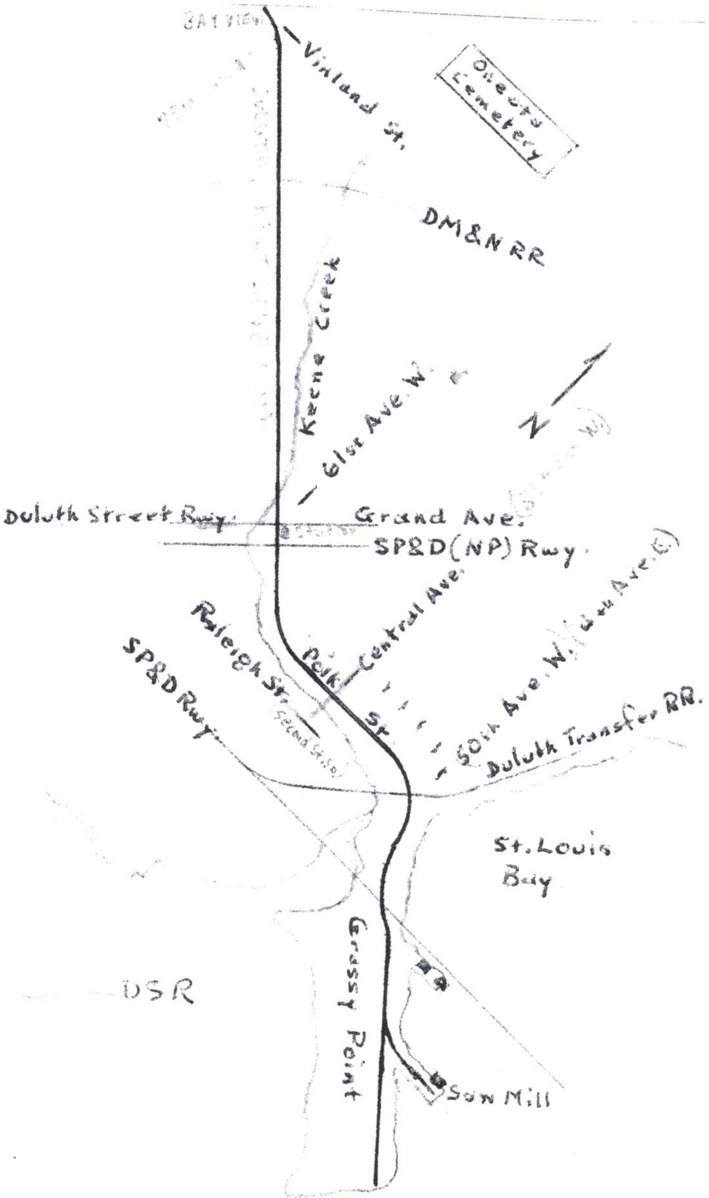
Connects at Incline [take St. P. & D. trains to West End Station] with trains leaving Duluth Union Depot at 10:10 a.m. and 2:35 p.m.

LEAVES AS FOLLOWS.	No. 2 Daily Ex. Sun	No. 4 Daily Mixed Ex. Sun.	No. 6 Daily	No. 8 Daily	No. 10 Daily	No. 12 Daily	No. 14 Daily	No. 16 Daily	No. 18 Daily	No. 20 Daily Mixed	No. 22 Daily	No. 24 Daily	No. 26 Daily
	a.m.	a.m.	a.m.	a.m.	a.m.	m.	p. m.	p. m.	p.m.	p.m.	p.m.	p.m.	p.m.
Iron Bay or Marinette Works..	7:05	......	......	10:25	.....	12:00	2:00	......		......	6:05	.....	.....
Fourth Ave. East....	7:08	......	......	10:28	.....	p. m. 12:03	2:03	......		......	6:08	.....	.....
Central Ave.........	7:10	......	......	10:30		12:05	2:05	......		......	6:13	.....	.....
Incline............	7:15	8:10	9:10	10:35	11:10	12:10	2:10	3:10	4:10	5:10	6:15	8:10	9:30
Pleasant View......	7:21	8:16	9:16	10:41	11:16	12:16	2:16	3:16	4:16	5:16	6:21	8:16	9:36
Bay View H'ts...Ar.	7:25	8:20	9:20	10:45	11:20	12:20	2:20	3:20	4:20	5:20	6:25	8:20	9:40
	a.m.	a.m.	a.m.	a.m.	a.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.

Trains No. 4 and 20 run as Passengers on Sunday.

N. B.—All Belt Line trains according to this time card have the right to the road. Other roads before using the time of Belt Line trains must get written permission from Belt Line conductors.

H. H. MYERS, Gen. Manager.


BAY VIEW
Vinland St.
Oneota Cemetery
DM&N RR
Keene Creek
61st Ave. W.
N
Duluth Street Rwy.
Grand Ave.
SP&D(NP) Rwy.
Central Ave.
Raleigh St.
Polk St
SP&D Rwy.
50th Ave. W.
Duluth Transfer RR.
St. Louis Bay
Grassy Point
DSR
Saw Mill

Duluth Belt Line Railway Co.

OFFICES: LYCEUM BUILDING

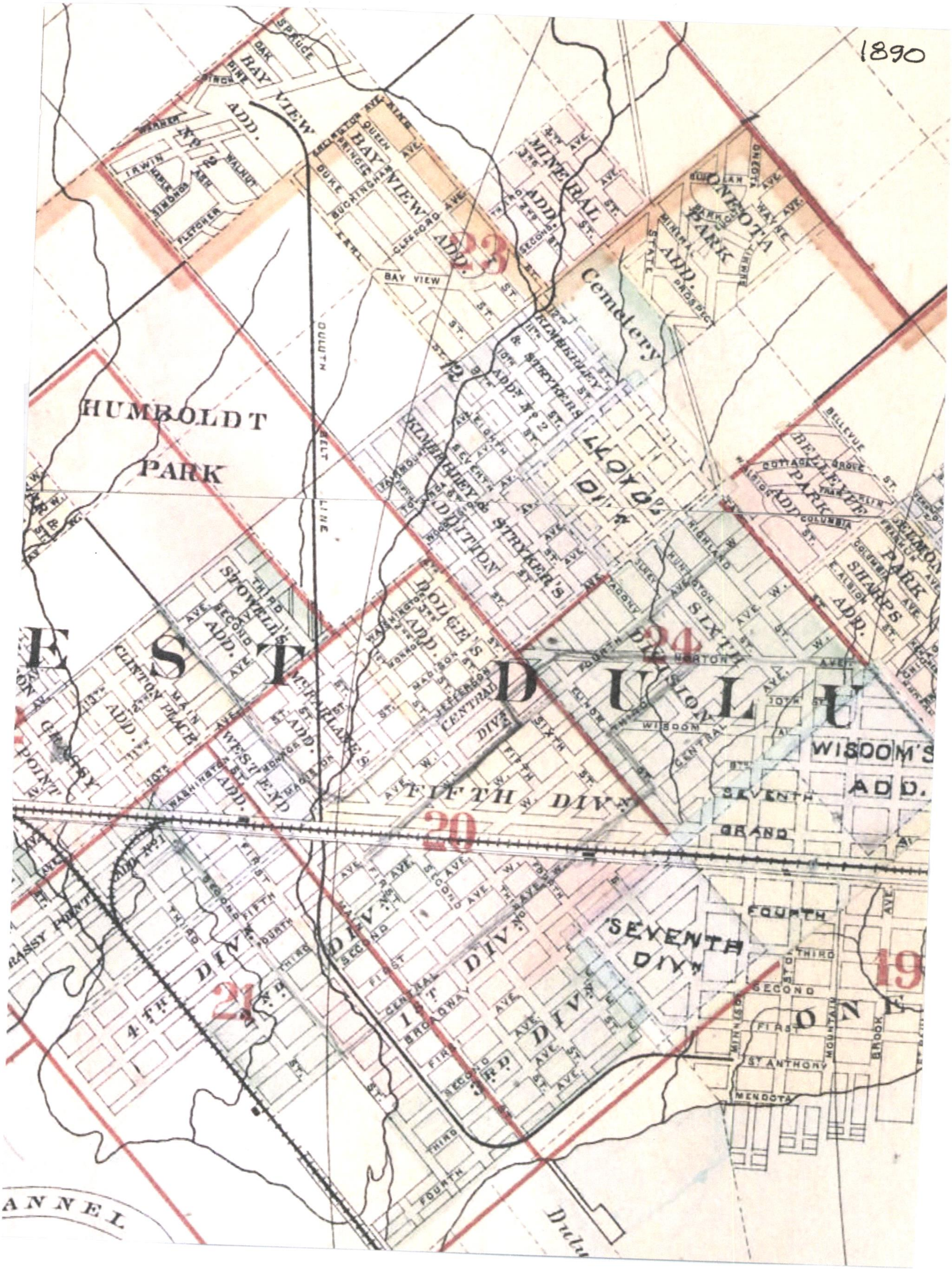
BETWEEN DULUTH, BAY VIEW AND PROCTOR

To Bay View and Proctor		To Duluth	
Leave 3rd Ave. W. via D. S. Ry. Co.	Leave 61st Ave. W. via D. B. L. Ry. Co.	Leave Bay View via D. B. L. Ry. Co.	Leave 61st Ave. W. via D. S. Ry. Co.
A. M.	A. M.	A.M.	A. M.
	*6.00	*6.00	*6.20
6.21	*7.00	*7.00	7.20
7.21	8.00	8.00	8.20
8.21	9.00	9.00	9.20
9.21	10.00	10.00	10.20
10.21	11.00	11.00	11.20
11.21	12.00		
P. M.	P. M.	P. M.	P.M.
12.21	1.00	12.00	12.20
1.21	2.00	1.00	1.20
2.21	3.00	2.00	2.20
3.21	4.00	3.00	3.20
4.21	5.00	4.00	4.20
5.01	5.35	5.00	5.20
6.01	6.35	*5.35	*5.50
6.21	7.00	†6.00	6.20
7.21	8.00	*6.35	6.40
8.21	9.00	†7.00	7.20
		8.00	8.20
		9.00	9.20

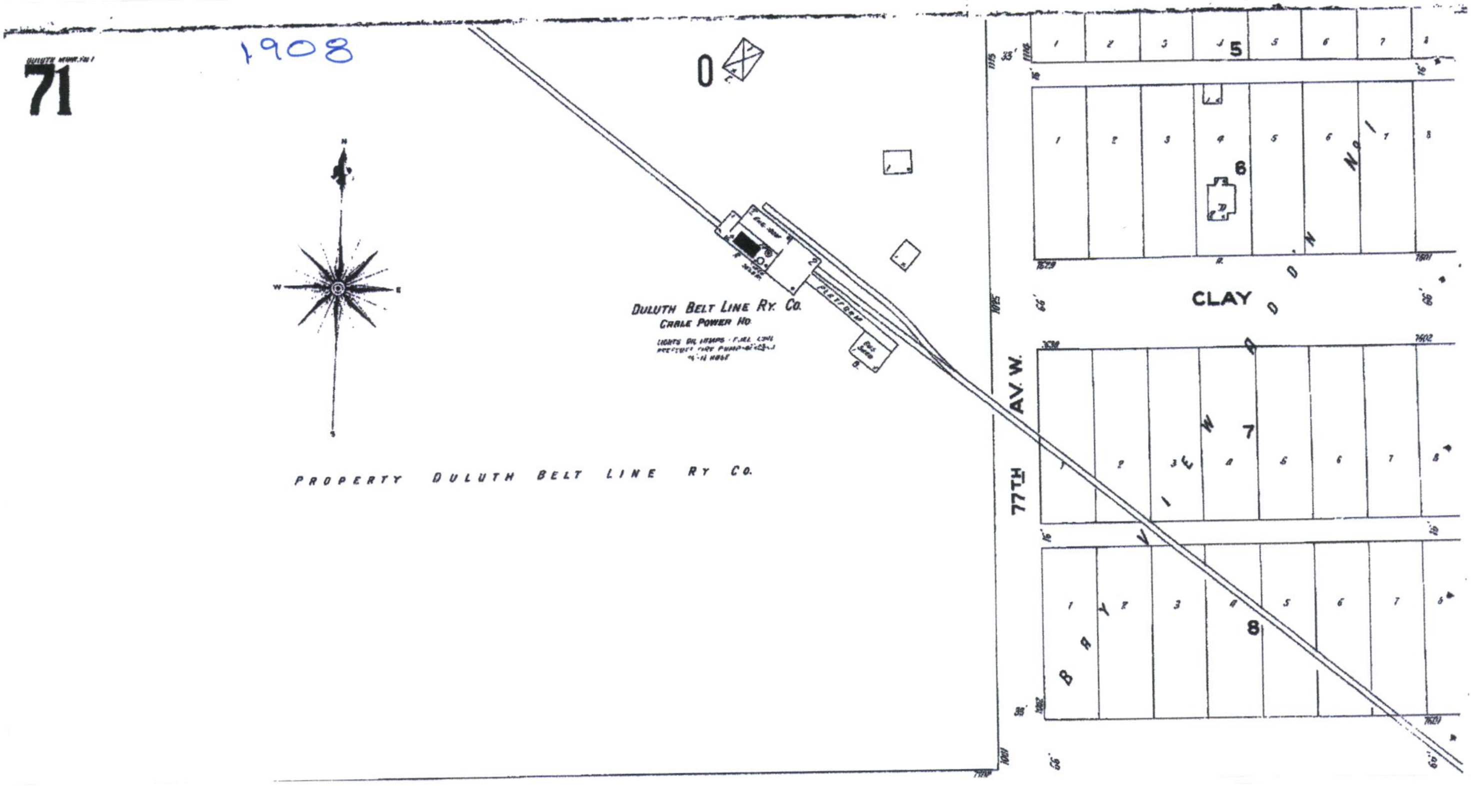
* Except Sunday.

† Sunday only.

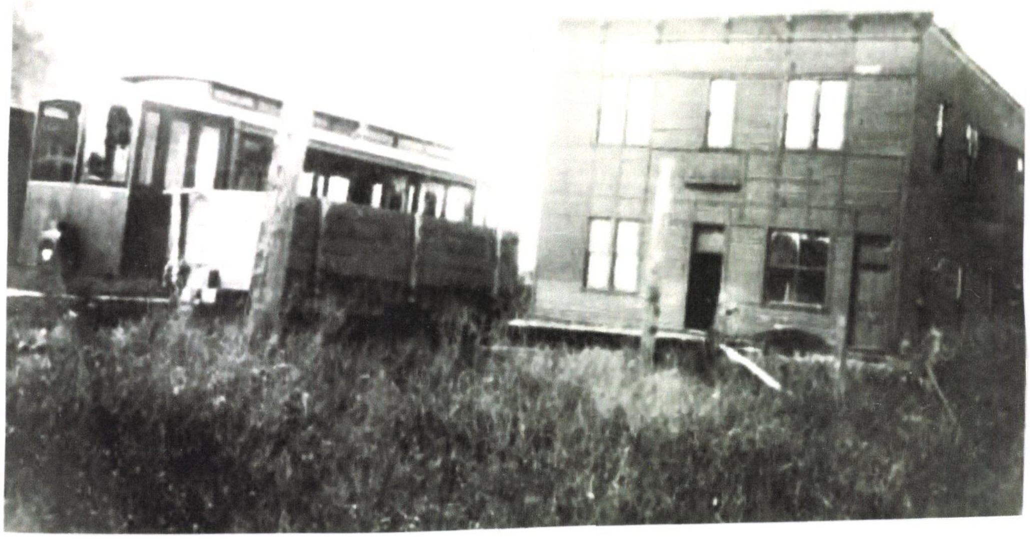
Take Duluth Street Railway Company's cars signed "E. 4th and W. 3rd to 71st Ave. W." (West Bound) and change to Duluth Belt Line Railway Company's Cars at 61st Avenue West and Grand.

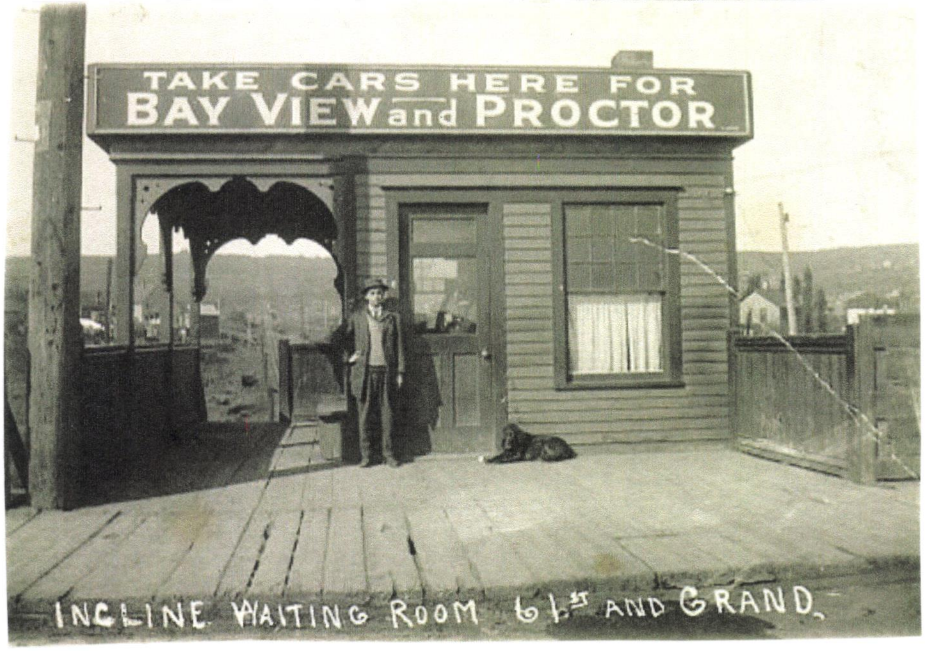

BAY VIEW ADD. No 2
BAY VIEW ADD.
MINERAL ADD.
ONEOTA PARK ADD.
Cemetery
KIMBERLEY & STRYKER'S ADD. No 2
LLOYD'S DIV.
HUMBOLDT PARK
DULUTH BELT LINE
KIMBERLEY & STRYKER'S ADDITION
BELLEVUE PARK ADD.
ELMONT PARK
SHARPS ADD.
STOWELL'S ADD.
DOLGE'S ADD.
CLINTON PLACE ADD.
MCFARLANE'S ADD.
WEST END ADD.
CENTRAL DIV.
SIXTH DIV.
WISDOM'S ADD.
FIFTH DIVN
GRASSY POINT
WEST DULU
23
22
24
20
21
19
4TH DIVN
2ND DIVN
1ST DIVN
3RD DIVN
SEVENTH DIVN
ONE
ANNEL
Dulu

1890

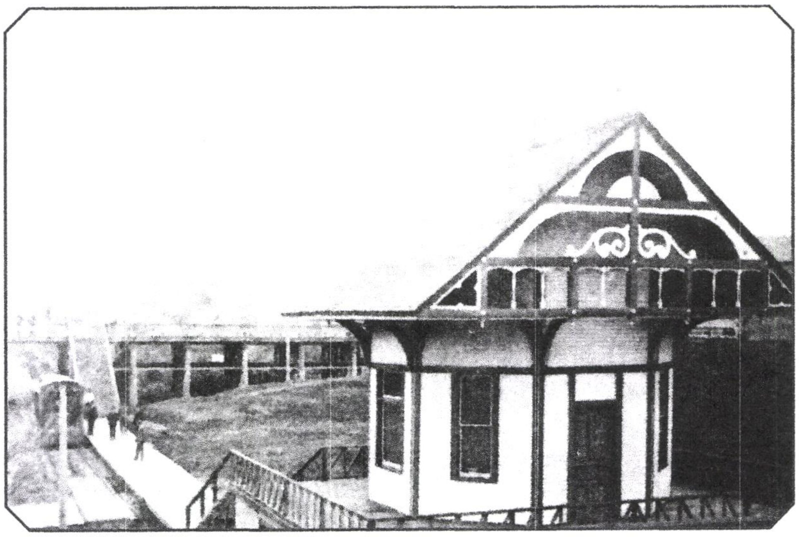

71
0
N
S
W
E
5
6
7
8
CLAY
77TH AV. W.
BAY VIEW ADDN. No. 1
ENG. ROOM
PLATFORM
DULUTH BELT LINE RY. CO.
CABLE POWER HO.
PROPERTY DULUTH BELT LINE RY. CO.

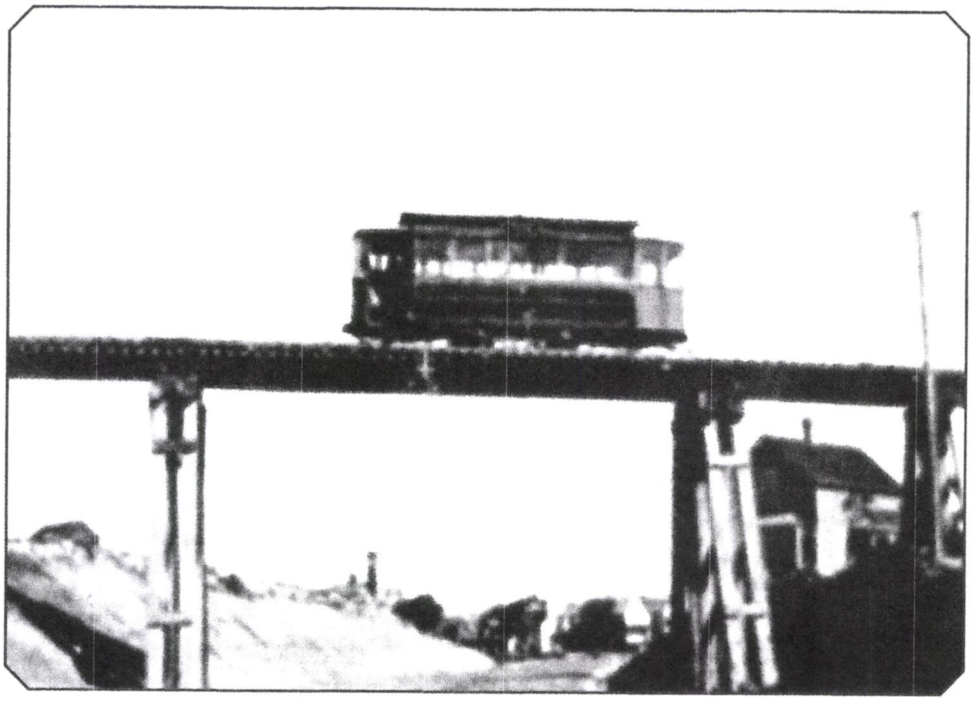
1908




TAKE CARS HERE FOR
BAY VIEW and PROCTOR

INCLINE WAITING ROOM 61st AND GRAND.





DULUTH BELT LINE RAILWAY												
FINANCIAL STATEMENTS												
	YE 6-30 1904	YE 6-30 1905	YE 6-30 1906	YE 6-30 1907	YE 6-30 1908	YE 6-30 1909	YE 6-30 1910	YE 6-30 1911	YE 6-30 1912	YE 6-30 1913	YE 6-30 1914	YE 6-30 1915
OPERATING INCOME												
Passenger	3,480	5,614	7,149	7,891	7,225	7,379	6,216	8,562	6,507	6,643	6,898	4,283
Freight	13	6	5	12	19	14	18	21	26	18	20	14
Miscellaneous					131	69	56	280	35	35	35	35
	3,493	5,620	7,154	7,903	7,375	7,462	6,290	8,863	6,568	6,696	6,953	4,332
OPERATING EXPENSE												
Maint.-Way		224	525	1,614		235	1,112	1,226	34	72	134	
Maint- Equpment		101	467	746		52	992	579	198	83	119	152
Traffic							557	851		919	736	
Transportation		4,538	4,214	3,438		6,015	2,593	3,894	5,025	3,928	2,856	3,743
General & Misc.		438				372	312	2,498		1,463	1,983	1,816
	3,329	5,301	5,206	5,798	5,223	6,674	5,566	9,048	5,257	6,465	5,829	5,711
OPER. PROFIT (LOSS)	163	319	1,949	2,105	2,152	788	724	(185)	1,311	231	1,124	(1,379)
TAXES		(790)							(295)	(257)	(371)	(283)
INTEREST		(411)	(34)	(3,482)	(2,392)							(1,087)
OTHER EXPENSE									(66)	(89)		(525)
NET PROFIT (LOSS)	163	(882)	1,915	(1,377)	(240)	788	724	(185)	950	(115)	228	(2,749)
EXPENDITURES FOR:												TOTAL
Invest.Road & Equip.						2,656	4,102	3,921	($725 was for Equipment)			10,679
Invest.General & Misc.								2,731				2,731
						2,856	4,102	6,652				13,410
CURRENT ASSETS	1,260	1,639	2,239	2,421	1,556	1,578	350				540	106
ROAD & EQUIPMENT	93,945	93,945	93,945	93,945	93,945	93,945	93,945		96,917	96,917	96,917	96,917
	95,205	95,584	96,184	96,366	95,501	95,523	94,295		96,917	96,917	97,457	97,023
NOTES/BILLS PAY./ MISC OBLIGATIONS	21,251	21,320	34,041	33,635	31,755	31,305	32,205		19,084	47,983	48,888	50,975
CAPITAL STOCK	138,500	138,500	138,500	138,500	138,500	138,500	138,500		138,500	138,500	138,500	138,500
SURPLUS	(64,546)	(64,236)	(76,357)	(75,769)	(74,754)	(74,282)	(76,410)		(60,667)	(89,566)	(89,931)	(92,452)
	95,205	95,584	96,184	96,366	95,501	95,523	94,295		96,917	96,917	97,457	97,023

GREAT NORTHERN POWER CO.

Fond du Lac

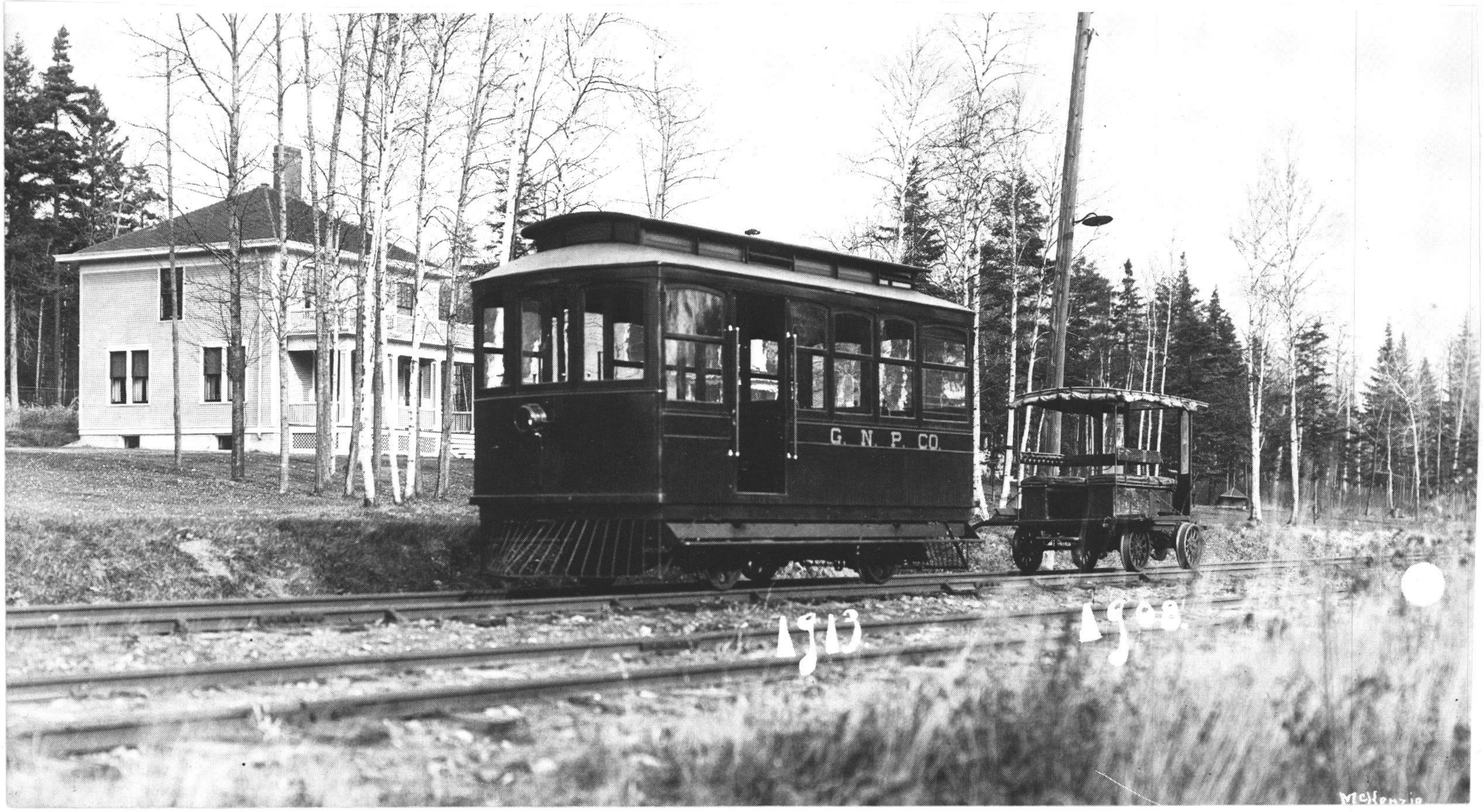
The Great Northern Power Co. (later Minnesota Power & Light Co.) operated a single-track branch line from the Northern Pacific Ry. at Fond du Lac to their power plant at the Thompson Dam on the St.Louis River.

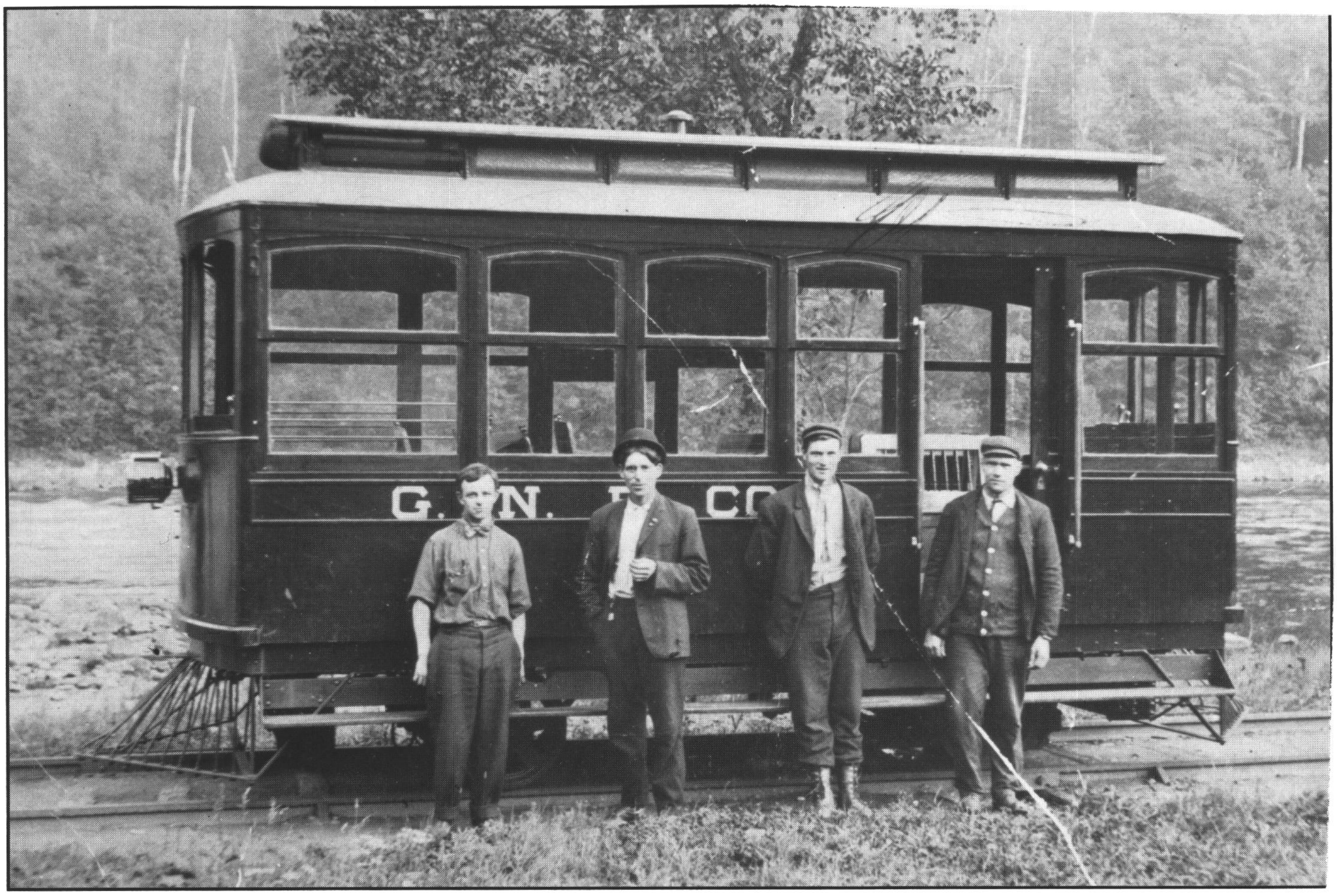
A Sheffield Model 16 gasoline-mechanical car was acquired in 1908 to transport employees and passengers over the branch line. The car was 15'6" long, had a Sheffield 25 h.p. engine, seated 12 persons and weighed 2¼ tons.

It was replaced in 1913 by a Fairbanks-Morse Model 23 gasoline-mechanical car. This car was 22'10" long, had a Fairbanks-Morse 35 h.p. engine, seated 24 persons and weighed 7½ tons. It was sold in 1923 to the White River Railroad, Rochester, Vermont, becoming their #4.

It was replaced in 1923 by a Mack Model AB Railbus with McGuire-Cummings body.

Passenger service was discontinued about 1926.





This gas-mechanical car carried passengers on the Great Northern Power extension west of Fond du Lac. It was built in 1913 and was succeeded by a Mack railbus in 1923. Passenger service ended in 1926. Wayne C. Olsen collection.

CONTENTS OF THE
BACK POCKET

DULUTH-SUPERIOR TRANSIT CO.
TROLLEY BUS SYSTEM

Oct 4, 1931 E. Superior St. from 45th Ave E to 61st Ave E (Lester Park)
Two Brill trolley buses. Overhead wires erected all the way to 26th Ave W and Superior St. for access to/from the carhouse

May 10, 1934 Lester Park-Piedmont Ave thru route established.
16 trolley buses purchased

July 8, 1939 New Duluth (Grand Ave)-Woodland thru route established.
11 trolley buses purchased

June 6, 1957 All trolley buses replaced with diesel buses. May 19th ?

Roster of Equipment

1-2	Brill	T-40	1931	40 psgrs	
	Built by Brill of Ohio. Rebuilt by Brill; later 35 psgrs				
3-9	Brill	T-40	1934	40 psgrs	
10-18	Twin Coach	40TT	1934	40 psgrs	s/n 10082-10090
19-28	Brill	40-SMT	1939	40 psgrs	s/n 519-528
29	Brill	40-SMT	1936	41 psgrs	Demonstrator, acquired 1939
30-32	Pullman	41CS-100-44CX	1944	44 psgrs	

Twin Coach 10-18 had dual motors (TT)
Brill: SMT means single motor trolley

DATA FOR G-E EQUIPPED COACHES

DULUTH-SUPERIOR TRANSIT COMPANY

NUMBER OF VEHICLES ORDERED	BUILDER	PASSENGER CAPACITY	DATE INSTALLED	COACH WEIGHT (LBS)	OVER-ALL COACH LENGTH (INCHES)	OVER-ALL COACH WIDTH (INCHES)	AISLE WIDTH AT CROSS SEATS (INCHES)	SEAT WIDTH (INCHES)	WHEELBASE (INCHES)	TIRE SIZE	GEAR RATIO	TURNING RADIUS (INCHES)	POWER FOR LIGHTING	AUXILIARY MOTOR	AIR COMPRESSOR	PROPULSION MOTOR	CONTROL
2 1-2	J. G. Brill	40	1931 Aug	17,600	378½	96	17¾	34	192	F-11.00x22 R-10.00x22	10.25	396	Trolley 20 lamps in series	BC76AB186 1 hp 2100 rpm series	GE CP-25-C	Two GE-1154-A4	GE Type PCM
7 3-9	J. G. Brill	40	1934 Aug	18,000	393¾	96	20	34	194	F-11.00x22 R-10.00x22	9.25	396	Trolley 20 lamps in series	BC76AB186 1 hp 2100 rpm series	GE CP-25-C11	Two GE-1154-A4	GE Type PCM
9 10-18	Twin Coach	40	1934 Aug 1935	17,000	340	96	19½	34	194	F-11.00x20 R- 8.25x24	10.25	396	Trolley 20 lamps in series	BC76AB186 1 hp 2100 rpm series	West. DH-10	Two GE-1154-B1	GE Type PCM
10 20-29	J. G. Brill	40	1939 Nov	19,750	411	100	21½	34	208	F-11.00x22 R-10.00x22	11.42	468	Trolley 20 lamps in series	BC76AB186 1 hp 2100 rpm series	GE CP-25	One GE-1213-D1	GE Type MRC*
1 19	J. G. Brill	40	1939 Nov	18,500	411	100	21½	34	204	11.00x22	11.42	468	Trolley 20 lamps in series	BC76AB186 1 hp 2100 rpm series	GE CP-25	One GE-1213-D2	GE Type MRC*
3 30-32	Pullman Standard	44	1943 Sept 1944	20,850	444	100	26	34	240	11.00x22	11.42	540	Trolley 20 lamps in series	BC76AB186 1 hp 2100 rpm series	GE CP-25	One GE-1213	GE Type MRC*

*Includes dynamic braking.